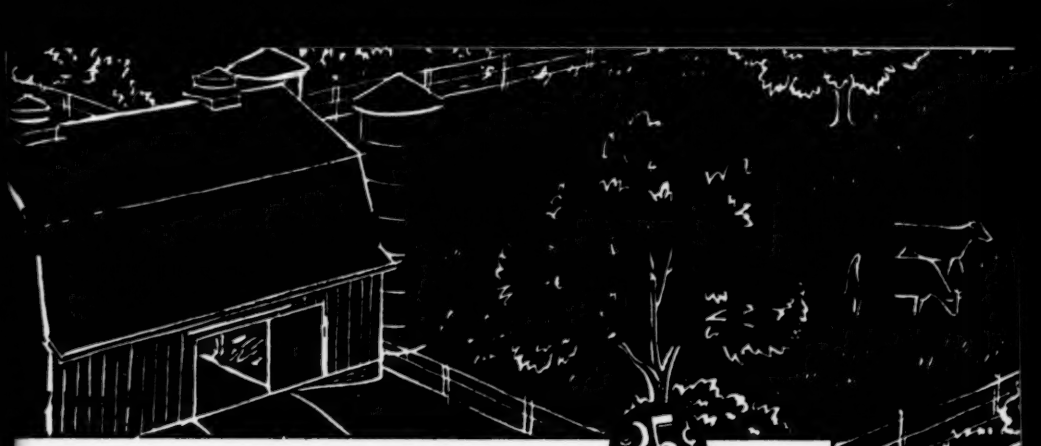

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Sheep May Be A Better Bet For You Than Dairy Cows!

Dairy farmers with fewer than 25 cows — or those producing grade B milk — may find more profit in raising sheep. Rapid advances in sheep production and marketing make sheep raising a practical alternative to dairying nowadays, according to Art Pope, University of Wisconsin.

Sheep raising takes less time and effort than milk production. Net returns per hour of labor for sheep average $3, compared to only $.70 per hour for grade B milk. Net returns per acre from sheep are nearly double the profit from producing grade B milk ($30 per acre instead of $16). These figures come from latest farm management figures.

Recent developments now minimize the risk in sheep production. These include pelleted rations, antibiotics and effective, new worming compounds.

New pelleted rations and self-feeding in the dry lot stretch pasture acres. A farmer can carry considerably more ewes with this system. Pellet feeding can also be used for lambs to bring them to market weight by early June before prices drop. This means lambs are out of the way during the busy summer season. By getting lambs off early, summer parasite problems are licked before they begin.

Another factor adding to the profit of sheep raising is the government incentive payments for wool produced at home. Funds for these payments come from tariffs on foreign wool imports.

The University of Wisconsin

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The Farmer's Digest

Volume 24 May, 1960 Number 1

The Full Story About Farm Subsidies

Nearly all European countries have them in one form or another and all have their troubles . . .

Patrick Phealon, English Marketing Correspondent

Condensed from Farmer & Stock-Breeder

WITHIN the next decade or two, the greater part of Continental Western Europe is to become virtually one vast nation. It will house some 165 million people—nearly as many as in the United States, and more than three times as many as in the British Isles. This vast nation, the "Common Market", will be made up of France, Germany, Italy, Holland, Belgium and Luxembourg.

It will become the world's largest importer of food, putting Britain back into second place. It will be second only to the U.S. as a food exporter.

These are the proportions of what is surely the biggest economic reorganization in history. Its long-term effects on world agriculture could be considerable. We must watch developments closely.

A study of farming policies may help us to see what this amalgamation might hold in store.

Price Support in Britain

Because of the unique British method of fixing and supporting farm prices, the world at large can fix its eagle eye on the precise amount of Government or taxpayers' money used to this end. In many other European coun-

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Farmer & Stock-Breeder, Dorset House, Stamford Street, London, S. E. 1, England

tries the systems used are different from and even more complicated. Direct comparisons of the amount of support are not possible because of this.

But the fact is that most of the farming industries are just as much financially supported as the U.S. and British — some perhaps even more so.

In Britain the avowed policy is to spend progressively less money at each succeeding Price Review, to bring producers' returns more nearly in line with the very low food prices.

Only the other week at the last British Review producers suffered another 6 per cent cut in profits. Some $25 million were lopped off prices and $36 million additional costs were not covered . . . just over 6 per cent of the industry's annual profits.

In striking contrast, a majority of Continental countries, despite high food prices (due largely to import duties), have found it necessary in recent years to strengthen the support measures for farmers.

This has involved either more government money or more out of the consumers' pocket via even higher prices in the shops.

Government Helps in France

In France, the story in recent years has been one of retail prices rising by leaps and bounds. All-around increases of 10 per cent have occurred in recent years. And France has not for some time been suffering from runaway inflation.

Furthermore, French farmers look forward to yet higher returns next year—they have already been fixed. 1961-2 prices have been increased by 6 per cent to compensate for rising costs. (In spite of this, 10,000 French farmers struck in mass demonstrations recently for higher farm prices.)

The backbone of French agricultural support is a high level of import duties on food. On fresh meat the rate is 32 per cent, on butter 24 per cent.

The result is very high-priced food to the housewife. But besides this "subsidy from the consumer," the Government spends upwards of $280 million on agriculture.

Before the housewife gets the product there is an internal meat tax plus distributing and retailing costs and margins.

Tallow, major by-product of the packing industry, may find a new use as a "carrier" for weed control chemicals. Studies at the University of Arizona seem to indicate fatty acid esters of sugars, made from tallow, meet all the requirements of a good "carrier."

Little wonder it comes out at a high price per pound.

High retail meat prices have discouraged consumption by some 10 per cent recently. This is regarded as a good omen by the French because it will give an opportunity to build up herd numbers.

It is a positive part of their policy to expand meat production. In 1961, France hopes to export 125,000 tons of beef and 50,000 tons of pigmeat.

With wheat the present policy is to keep production steady. Last year, producer prices were actually cut.

Even so, for the best wheat samples growers have received a good price on average. Soft varieties earn lower prices than hard. Unmillable grain is, to an increasing extent, sold back to producers at the highly subsidized price.

Basic producer prices for grain can be raised or lowered by 10 per cent according to yield. This obviously takes away a good part of the season's risks.

Retail milk prices are controlled as in England. Support for the dairy industry also relies on minimum buying prices for butter and cheese, stockpiling, subsidized exports and control of butter imports.

Last year when butter became very short throughout Europe, the French Government had to stop some sales.

This framework of prices should surely provide an adequate return. If profits to the 2¼ million French farmers, with mainly family labor, are still not so good, it must be because of the small acreages and the lack of technical know-how.

Dutch producers, too, have recently had the benefit of rising prices. In 1957 there was a big increase for the whole industry, due to a new method of assessing costs.

Similar Support in Holland

The Dutch method of support is more closely allied to the English than the high-import-duty system. Government spending for 1959-60 is expected to be over $140 million. Taking the relative size into account, this is a very similar level of spending to that of the British Government.

Some people go through life like a wheelbarrow — they progress only when someone pushes them.

Over 80 per cent of this support goes to the dairy industry.

A marketing board for milk and dairy products has very full powers, including the fixing of minimum export prices and of export levies. Off and on, it sub-

sidized butter exports up to the end of 1958.

All imports are licensed and subject to a 15 per cent duty (10 per cent for fresh milk). Producer prices are somewhat lower than in England.

The Meat Marketing Board (in fact, called a Commodity Board) is able to regulate production, distribution and foreign trade and to fix prices and margins. All importing and exporting of meat is under licence. Imports pay 12 per cent duty (for canned meat 30 per cent).

A high, fixed price was paid for last year's wheat crop. This high price is maintained by compelling millers to use 38 per cent of home wheat in their flour mix.

In the final price of bread, the high domestic and the lower imported wheat prices are averaged out. It is again a case of high retail prices supporting agriculture.

Within this price structure, farm incomes of $2,100 to $2,800 per farm of under 50 acres are not uncommon. While rents are controlled at a low level and there is a very useful degree of Government or Government-backed support, the Dutch farmers are obviously much more efficient than many of their Continental counterparts.

Birdsfoot Trefoil is Good Sheep Pasture

Birdsfoot trefoil makes a top quality pasture for lambs. Lambs can turn the legume into 0.4 to 0.5 pounds per day gain, according to research at the Michigan State University Agricultural Experiment Station.

Birdsfoot is a particular legume. It won't grow everywhere and it isn't the easiest plant to get started. But once it is on its way, sheep can make good use of it.

Leonard Blakeslee, sheep nutritionist at the station, reports that some of the experimental pasture seedings are as much as eight years old and are still providing a lot of grazing. Alfalfa fields usually drop out of production within four to five years when grazed.

In the experiments, lambs were turned out on the birdsfoot pastures in May and left there all season.

—Michigan State University

Report On Dwarf Corn

Short, thick-stalked corn, called a brachytic dwarf, is a new and exciting development. Some farmers have tried it . . .

Condensed from The Farm Quarterly

Chester Charles

DWARF corn has always been with us. Until recently, it was given scant attention.

A stunted normal hybrid is not a genuine dwarf; dwarf corn is a distinct breed. Last season, interest mounted in what had formerly been considered freak corn. Now, each year, thousands of acres will be planted with dwarf types. Some farmers find them excellent; other farmers are disappointed.

Why grow dwarf corn? Lewis M. Camp, corn breeder for Pfister Associated Growers, said, "The jokers around the hot stove will tell you dwarf corn is for feeding dwarf cattle to get condensed milk. That may be funny, but not fact. Dwarf corn is not just stunted or small corn. The stalk is more compressed and fewer of the brace roots grow above ground than with normal corn. This gives it greater structural strength. It stands up where other corn goes down."

The dwarf corn hybrids now under wide experimentation are of two types:

(1) Reduced types. These are sometimes referred to as miniature corn. When compared to standard hybrids, stalk height and leaf area, as well as ear and kernel size are smaller. In a few cases, fair yields have been reported where plant population has been greatly increased. This is the kind of dwarf that has been planted at Purdue and elsewhere at rates exceeding 70,000 plants per acre.

(2) Short-stalked hybrids. All parts of the plant are normal in size except the stalk, which has short joints, especially below the ears. Corn breeders call these plants "brachytic." In 1958, dozens of farmers in states near Illinois plot-tested samples distributed by the University of Illinois. In states near Massachusetts, similar testing was conducted by the Eastern States Farmers Ex-

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change. Many research men consider brachytic hybrids the most promising.

Just as there are many breeds of normal hybrid corn, there are innumerable dwarfs of both types being tested. Through crossing, particularly with short-stalked types, dwarf counterparts of standard hybrids like U.S. 13 are being produced. The object of seed growers is to breed adapted dwarfs for all areas in long medium and short season ranges.

Stalk height and grain yield in dwarfs are relative factors just as they are with standard hybrids. Any farmer who has seen Iowa 939, for example, grow 15 feet tall and yield 150 buschels of corn an acre on rich botton land, knows that the same hybrid might mature at a height of 7 feet and yield 45 bushels of grain on poor upland soil. Dwarf hybrids react similarly to environment. Those that generally tend to mature at four feet can grow twice that tall under favorable circumstances, within the potentials of their pedigrees. Ear height is likewise variable but it is influenced more by breeding than by growing conditions.

April as an excellent time to repair and clean window and door screens in anticipation of a fly-free home this summer. Barns and lots should be cleaned now to help keep down the number of flies next summer.

Standard hybrids are the survivors of over 25 years of development and selection. Dwarf inbreds at present represent only four or five generations of breeding. To hasten the process, frequently a winter generation is raised in Florida. Some of the seed to be planted in the Corn Belt this summer is being harvested in Florida early this spring. The problem of plant breeders is to cross and back cross and select in order to perfect a hybrid that is commercially acceptable.

Most of the selections must be discarded. On some, ear height is too variable with a few ears laying on the ground while other plants of the same strain have ears three feet above the ground. Other strains prove unsatisfactory in other respects, in height, in leafing, in yield. Some crosses turn out to be two feet tall, some sucker like large clumps of Johnson grass, some are completely barren of ears. When a promising cross is found, it must prove itself in many locations under greatly varying conditions before it can be considered ready for use.

Corn breeders like Earl R. Leng of the University of Illinois

at Urbana believe they are near to producing a dwarf corn that will stand well, pick well and yield well. "We are shooting for a short-stalked hybrid that grows four or five feet tall with the ears twelve to twenty inches above the ground," Dr. Leng pointed out. "In the big corn-producing counties of Illinois, Iowa, and Nebraska, lodging is a serious problem in three out of every five years. Lodged corn usually breaks in the first few joints above the ground. The number of joints or internodes in dwarf corn is the same as in normal corn. But in dwarfs, the joints are from one to three inches long. instead of a normal six inches. The ears grow less than two feet off the ground rather than at the usual forty-two to fifty-six inches. This joint length and ear height reduce leverage action in the wind. The more closely-spaced nodes add strength. There is no doubt about the superior standing ability of dwarfs. In test after test, where the normal hybrid U.S. 13 has shown as many as half its stalks lodged, its dwarf counterpart, Illidwarf 513, has stood erect. In only a few tests has any significant lodging of the dwarf been seen. Even under very severe conditions, several of the dwarfs under test have remained almost a hundred per cent erect."

The big disadvantage of dwarfs is their reduced yield. Dr. Leng stated, "Yields of some dwarf hybrids have in certain cases compared favorably with normal, adapted hybrids. In general, however, yields have been ten to twenty per cent less for the dwarfs. With further breeding work, in my opinion, yields can be raised to a satisfactory level. Late harvesting might favor the dwarfs. With normal hybrids a twenty per cent loss from down corn at late harvest is not unusual. It is the bushels harvested, not the bushels grown, that count."

The best consistent yields have been reported by D. L. Matthews for Eastern States Dwarf 602,

A handful of commercial fertilizer or three to four inches of manure should be spread around peonies, climbing roses, rhubarb or asparagus plants during early April, say horticulturists.

brachytic counterpart of Pennsylvania 602. In over 30 demonstration plantings in Pennsylvania, Massachusetts, Rhode Island, Connecticut, Delaware, and Maryland, the tall hybrid averaged 109 bushels per acre, with the dwarf averaging 107 bushels. The high yield of the dwarf was due to its prolific tendency for it averaged 1.7 ears per plant com-

pared to 1.0 ears per tall plant.

Southern experience has not been so favorable. Of 32 dwarfs tested at Raleigh, North Carolina, all fell in the yield range of 65 to 85 per cent of the normal hybrid, Dixie 82. D. L. Thompson, USDA Research Agronomist who conducted the tests, said, "Additional breeding is necessary to narrow the yield gap. Standability is in favor of the dwarf. After hurricane Helene passed through a dwarf test of twenty-five hybrids averaged twenty-seven per cent stalk breakage but thirty-six normal hybrids averaged fifty-seven per cent stalk breakage."

Dwarf Silage

The compactness of dwarf plants gives the foliage the appearance of being more dense than it is. Characteristics of the leaves, among them the ability to stay green longer, point to the possibility that dwarf corn might be superior as silage. John V. Brewer of McCook, Nebraska, had difficulty harvesting his dwarf plots because the ears were placed too low on the stalks. He turned cattle into the field. They cleaned up the dwarf plants completely before working on the standard corn.

Sprays and louse powder control hog lice. Pig pox can be readily controlled through the elimination of lice.

Since as much as 70 per cent of the corn produced each year in our northeastern states is ensiled, dwarf corn research there has emphasized silage possibilities. In a silage trial at Feeding Hills, Massachusetts, the green weight yield per acre of dwarf corn exceeded that of counterpart standard hybrids. In stalk weight, green or dry, the standard hybrid was heavier, but the dwarf excelled in green and dry weight of both ears and leaves. The dried leaves and ears of the dwarf weighed more than the entire dried plant of the standard corn. That was one test. In other silage tests, weight results have slightly favored standard hybrids, but in all trials, the high proportion and quality of leaves reported would indicate that dwarf corn is likely to make highly digestible silage.

It has been felt that weeds would "take" short corn because of less shading in and between the rows. Reports from growers do not affirm this belief. In an Aurora, Illinois, test plot, one spraying with 2,4D with no cultivation, kept weeds in check. High plant populations in the neighborhood of 20,000 plants per acre, have served to keep weeds down in other tests. The

later cultivations possible with shorter corn also aid in weed control.

Other dwarf corn features, good or bad, have yet to be conclusively demonstrated. It is thought that the smaller plants might need less water and fertilizer. No one has so far given proof. At present, recommended row spacing and fertilizer application are the same for dwarfs as for regular hybrids. Nor has ease of harvesting by corn-combine been effectively tested. Higher plant population, in the few instances where tried, has had conflicting results. Because of less shading, interplanting with forage crops such as alfalfa is expected to produce superior stands of the forage crop.

In their disfavor, plant breeders caution that dwarfs have not yet been thoroughly screened for disease resistance. Some of the material used to introduce the brachytic character has been rather susceptible to helminthosporium leaf blight. Also, because most dwarfs at present have upright ears, they might be susceptible to greater weather and disease damage.

Some plant breeders also feel that the dwarf is prone to outcrosses which give normally tall plants in a dwarf field—similar to the rogues in hybrid Sorghum. It will take greater care in protecting the breeding stock to prevent this.

What They Say

Farmer reaction has been mixed. Charles J. Hulse, Westport, Indiana, said, "The dwarf picks easy. It stood up 100 per cent." Kermit E. Esrey, St. Joseph, Illinois, reported "Field loss was extremely low for the dwarfs. They also caused no trouble in the picker, while we had considerable difficulty with the regular hybrids the same day because of dryness, with stalks accumulating in the elevator and husking bed." R. E. Dagner of Assumption, Illinois, felt differently. He said, "The stalks are too short and break off in the picking roll. The dwarf looked better than it yielded." A southern farmer, Charley Davis of Pollocksville, North Carolina, who grows about 400 acres of corn each year in the coastal storm area, said, "I want short corn, but the dwarfs we now have are too short. Corn breeders have overdone it. These dwarfs will stand our hurricanes all right,

Poultry scientists recommend replacing small baby chick-size feed troughs with larger, broiler-size troughs by the time the chicks are five weeks old. Feed is wasted when large birds use small troughs.

when other hybrids go down in a tangled mess. But my picker-sheller doesn't get all the ears, especially those with tips resting on the ground. Still, I don't mind a slightly lower yield from the dwarfs because they stand until I get around to harvest."

Corn breeders do not expect dwarf hybrids to push our current hybrids off the land. Research men believe dwarfs will eventually have a two-fold place in agriculture. John C. Anderson of Rutgers University, New Brunswick, New Jersey, stated, "A crop that can be left standing in the field longer takes advantage of a higher rate of drying. This gives less chance of spoilage when cribbed at a lower moisture content." E. C. Rossman of Michigan State University, East Lansing, Michigan, views dwarfs as the answer to environmental conditions like the loose muck soils of Michigan where normal hybrids grow very tall and are seriously subject to root lodging in even mild winds.

Common Corn Deficiency Symptoms

	Whole Plant	*Leaves*	*Ear*
Nitrogen	—Lack of dark green color — spindly	Lower leaves V shaped yellowing or scorching from tip inward along mid-rib	Small, tips unfilled
Phosphorus	—Stunted	Sometimes purpling	Small, unfilled irregular kernel rows
Potassium	—Dwarfed, weak stalks, small root system	Yellowing or scorch on edges of lower leaves	Small, loose or chaffy, tips unfilled
Zinc	—Dwarfed	Young leaves — yellowing between veins — new leaves yellow	

Sudan Grass: Hot Weather Feed Insurance

Sudan grass can be used for midsummer pasture, hay, silage or green feeding . . .

Condensed from University of Wisconsin Circular 570

M. J. Wright, J. M. Sund, F. V. Burcalow

SUDAN grass is a fast-growing, hot weather annual that will provide an abundance of pasture in midsummer when most other forage plants are inactive. Beside pasture, it can be used for silage or green feeding.

Yields of 3 to 4 tons of dry matter or 10 to 12 tons of silage per acre are common.

Sudan grass is especially valuable on farms that depend on "permanent" pasture. But it can be used to advantage as a supplement to cropland pasture.

Sudan Requires Heat

Because sudan grass is a heat-loving crop, it grows best in about the same region where 105 day or later corn hybrids will mature. Sudan does best on warm, fertile soils, — cold, wet soils are definitely unsuitable.

Rate and Date of Sowing

Sudan grass should be sown with a grain drill or broadcast seeder at the rate of 30-35 pounds of good seed per acre. If a seeder is used, cover the seed with a light harrowing. Either way, make sure the seed isn't covered more than 1 inch on heavy soil and 1½ inch on lighter soils.

Sudan is normally sown 10 to 14 days after corn planting time. Weeds gain the advantage whenever it is sown in a cool or cold soil. On many farms it helps to make two sowings a week or ten days apart. The last sowing should never be made after July 1. Even though sudan grows fast, it normally takes 6 to 8 weeks for it to make enough growth for grazing or harvesting.

You can determine the acreage to sow by the number of livestock that will be using it. One-third to one-half acre per cow is recommended. Since Sudan should be rationally grazed, staggering dates of sowing and dividing the field

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into two or more areas will be helpful in later management.

Is Sudan Grass Safe?

Sudan grass is a member of the sorghum family. And like other sorghums it may, under certain conditions, produce enough prussic acid to be dangerous to cattle and sheep. Unfortunately, sudan grass has a bad reputation in some areas because of this poisoning. Yet as a group, sudan grasses are much safer for grazing than forage or grain type sorghums.

Sudan grass will be reasonably safe if:

- Pure Seed of Recommended Varieties is Used
- Short or Stunted Growth is Avoided
- Soil Fertility is Balanced

Frost does not make sudan grass more poisonous. However, if favorable growing conditions return after frost, young shoots will start out from the crown. Cattle will avoid the frozen tall grass and graze mainly these dangerous young shoots.

Soils high in nitrogen and low in phosphorus, such as peats and mucks, sometimes increase the level of prussic acid in sudan grass. Proper fertilization will bring these nutrients into balance and decrease chances of poisoning.

VARIETIES	RECOMMENDATION	SAFETY
Piper	recommended	excellent
Greenleaf	acceptable	good
Common Commercial	acceptable	fair
Tift	not recommended	poor
Sweet Sudan	not recommended	poor

Short or stunted growth may be produced by drought, cold, or infertility. In any case, cattle and sheep should not graze such growth. *No poisoning has been traced to sudan grass more than two feet tall.*

For safety grow sudan grass in warm fertile soils that are well supplied with moisture. Control grazing to prevent heavy feeding on young or stunted growth. Early plowing and fallowing of fields scheduled to grow sudan helps build up reserve moisture in the soil — but growing a winter grain or other early season crop reduces moisture available.

Other Uses of Sudan Grass

Sudan grass is most commonly used as mid-summer pasture. It can also be used for hay — but it is very difficult to cure, even in hot dry weather, because the stems are thick and juicy.

Soybeans are sometimes sown with sudan grass — mixed at the rate of about 1 bushel of soybeans and 20 pounds of sudan grass to the acre. Although the

soybeans increase the protein content of the forage, they usually don't increase total yield. Furthermore, soybeans don't recover after cutting, so any second growth will be almost entirely sudan grass.

Sudan grass may be used for silage or green feeding. If the crop is to be green fed, stagger the dates of sowing as for pasture. Sudan grass silage is usually considered to be about 10 to 15 percent lower in feed value than corn silage and it may be somewhat less tasty. Analyzed samples of sudan grass silage have varied from 7 to 11 per cent protein on a dry matter basis, depending on the stage of maturity when harvested.

Sudan grass is generally not recommended as a companion crop in establishing new seedings.

Sudan's Effect on The Soil

Crops following sudan sometimes show signs of a definite shortage of nitrogen. This is probably due to bacteria, in decaying the sudan roots, temporarily tying up the available nitrogen in the soil. This is especially true when the crop is grown on soils of low fertility. Usually this condition can be eliminated by applying 6 to 8 loads of barnyard manure or 40 to 60 pounds of nitrogen per acre for crops that follow.

Social Standing of Chickens

Clothes may not make the man—but they undeniably have a psychological effect.

A similar situation exists in the chicken flock. Poultry scientists at Virginia Polytechnic Institute have found that surgical removal of the comb and wattles of chickens has a definite effect on the chicken's social standing. Chickens so treated (dubbed) are subordinate to non-dubbed chickens, standing lower in the social or peck order of the flock.

No difference was found between treated and untreated females for age at sexual maturity, egg weight, shell thickness, yolk mottling, blood and meat spots, liveability, or fertility.

There was a significant difference, however, in laying rates at different times of the year. Dubbed birds layed more eggs than untreated chickens during colder months, and the non-dubbed birds layed at a higher rate during the warmer months.

—*Virginia Polytechnic Institute*

Chimney Smoke

by Irene Rudie

If any lift of mine may ease
The burden of another,
God give me love and care and strength
To help my ailing brother.
—Author unknown

The farm wife who does her own interior decorating would save herself a lot of work and money over the years, if she could bring herself to stick to the same color scheme for the life of the house!

* * *

Another difference between the two halves is that a husband goes into a store to buy and a wife goes in to shop.

* * *

A small boy, on his first visit to a large railroad station said, "This must be the place where the trains live."

* * *

A man is a person who, after fixing something around the house, lays down his tools, and expects to find them there on the floor six weeks later.

* * *

Young graduates receive so many beautiful and ingenious writing implements as gifts. Oh, if only there was a magic formula to go with them to help their users spell.

It's hard for youngsters to understand that the same browning effect of the sun can be had in the vegetable garden as well as at the lake.

* * *

Be sure to include the young spears of dandelion in your salads for extra flavor and vitamins. And lambsquarter makes mighty good spring greens, cooked gently and served with butter or brown diced bacon.

* * *

Most farm wives use the package cake mixes, but everyone has an old favorite that has to be mixed from scratch. No matter what the results or satisfaction in the finished cake, one cannot help but be appalled at the number of dishes and bowls that were used to achieve it.

* * *

The little wren sits on the clothesline post as I hang up the Monday wash and is near to bursting with a song that is as big as all springtime.

Will Vaccination Lick Mastitis?

New vaccine plus good management may be the effective tool for controlling "staph" mastitis . . .

Condensed from Wisconsin Agriculturist

VACCINATION is beginning to look like another effective tool in the fight against mastitis. Development of a new vaccine by a research team at the University of New Hampshire makes it possible to attack staphylococcal mastitis, one of the most stubborn kinds, with a new method of preventive control.

The toxiod vaccine was perfected by a research team headed by L. W. Slantetz, a bacteriologist, after five years of tests in a dairy herd of 160 cows. Supporting these studies were field tests on dairy farms.

Here are some questions and answers on the new vaccine and how it could affect the mastitis control program on your farm:

Q. How effective is the new vaccine?

A. Results are encouraging, however more research is needed before accurate conclusions can be drawn. Field tests by dairymen in 1960 will help and the scientists are working to make the vaccine more potent.

In the New Hampshire experiment, two groups of cows with about the same percentage of staphylococcal mastitis were housed in separate barns for an 18 month test period.

Among the 40 cows in one barn, 16 were vaccinated with a toxoid from the laboratory, 15 with a commercial toxoid and nine were left unvaccinated as "control" animals.

In this barn, there were 17 acute infections of mastitis in the vaccinated cows and 33 in the unvaccinated animals during the test period. This was an average of one infection for every two vaccinated cows and almost four infections in each unvaccinated cow.

In the second barn, records were kept on 30 unvaccinated cows. These unvaccinated cows had 46 acute cases of mastitis.

Q. Was the spread of mastitis checked by the vaccine?

A. Yes. The 31 cows vaccinat-

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ed with the toxoid vaccine had 16 percent of their udder quarters infected with staphylococcal mastitis. At the end of the test period, only 14 percent were infected.

But in the control group of nine cows in the same barn, 16.6 percent of the udder quarters were infected when the experiment started and 50 percent were infected at the end of the 18 month test period.

Q. Will the vaccine control all types of mastitis?

A. Definitely not. There are at least 14 kinds of bacteria which can cause mastitis if they get into the udder. This vaccine controls only one, staphylococcus aureus. However, the New Hampshire researchers found from 10 to 60 percent of the cows tested were infected by this organism.

Q. Is the vaccine supposed to be a positive cure for this type of mastitis?

A. No, the researchers say it will only help in preventing its spread and reduce the infections caused by staphylococcal mastitis.

Q. What is the effect on cows with established chronic infections before vaccination?

A. In this case, the vaccine will not clear up the disease but it does help to prevent further trouble.

Q. How often must cows be vaccinated?

A. According to Slanetz, a dairy herd may be maintained comparatively free and immunized to staphylococcal mastitis by vaccinating all cows with two shots of the toxoid vaccine spaced a month apart. From then on, one vaccination a year will be required to continue the immunity.

Q. Can an individual dairyman buy the vaccine?

A. No, it is obtainable only through your veterinarian.

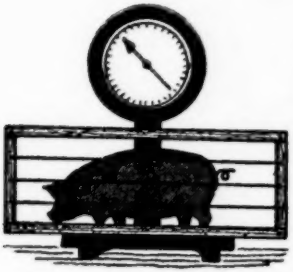
Q. Should I try it in my herd?

A. Ask your veterinarian. The vaccine is usually recommended for use in any herd where testing shows staphylococcus aureus infection.

Vaccination could become an important part of your mastitis control program, but don't expect it to solve your mastitis problems overnight or replace the antibiotics and management practices which have been keeping mastitis under control in the past.

IF LEPTOSPIROSIS EXISTS in your neighborhood, you'd better call in a veterinarian and get your pigs vaccinated right away, say swine specialists at Iowa State College. It may be too late to do much good if you wait until after the disease appears in your herd before taking action.

What's Ahead In The Hog Business?



A blueprint for the future of your hog enterprise . . .

Condensed from Successful Farming

J. A. Hoefer,
Michigan State University

WHAT is in store for the aggressive, intelligent hog man during the next few years?

This report tells what I see ahead, and what I think you should do to take advantage of coming changes in the hog business.

This is risky. Prediction of things to come always involves speculative risk. But if we look at history, we can find the courage to "go out on the limb," so to speak. Reason is that in the area of nutrition and production we have always *underestimated* future developments.

If the next 10 years don't exceed the past 10, it will be a great surprise. Research in industry, in the USDA, and at the university experiment stations *insures* progress in technological advances.

Perhaps it would be helpful to think about what the 1970 commercial hog enterprise might be like—then see how we get from here to there. By today's standards, the operation will be large and specialized.

The number of sows will vary rather widely but there will be certain principles common to all operations. The range in sow numbers will be from 50 to 500 with a few going to 1,000 sows. The great concentration will be around 100 sows per commercial hog farm.

This hog man will not be an in-and-outer. He will be a year-round producer of animals tailor-made to meet a specific market.

Automation will handle scientifically compounded rations and will remove all waste products. Sows will be bred artificially to meat-type boars. Sows will be farrowing every month of the year on a controlled and scheduled basis.

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Now for more details:

Hog farms will be: Bigger, more specialized, fewer in number. Specialization is taking place in all segments of our economy. Your industry is no exception.

However, the swine industry is unique in that different phases of hog production require widely varying skills, facilities, nutrition, and management. This fact improves the opportunity for you to specialize in certain areas where you excel.

For example, you may specialize in the production of a particular kind of market. Or you may concentrate on the production of feeder pigs.

You may find your talents and resources best used in the development of an excellent finishing program.

At the very pinnacle of specialization you may be a producer of selected breeding stock.

The seed stock producer will develop lines for optimum combining ability. Although a certain amount of inbreeding will be involved, the development of these lines will be largely a matter of critical selection based upon very complete records in performance testing.

Production systems are changing. The trend toward multiple farrowing is increasing the use of buildings and equipment—thereby lowering their cost per pig. The 1960s will see the two-litter system joining the one-litter program in the limbo of forgotten practices.

Managerial skill, nutrition, and disease control are more critical under a multiple farrowing program. At the present time, the good hog man can handle 4 to 6 litters a year successfully. But beyond three groups of sows, management and disease control become limiting factors.

However, there is encouraging work with disease problems which indicates that during the 1960s monthly farrowings will be the practice of many swine specialists.

Confinement production is a natural outgrowth of improved swine nutrition and multiple farrowing. Proper nutrition makes it possible to raise hogs without pasture and multiple farrowing makes it an absolute necessity under many conditions.

There is no substitute for a soil test.

Today, we get faster gains in dry lot than with pasture. With nutrition no longer the limiting factor, housing and manure handling are now factors of major consideration in a confinement-production program.

You'll face some problems. As you move in that direction you

should recognize that there are certain problems inherent in specialization and volume production:

1. *Bigness and volume alone do not insure efficiency.* The swine industry is unique in that there are certain phases where bigness does not result in improved *animal* performance. In fact, there may be a decrease.

The payoff from size comes largely from more efficient use of labor, equipment, and capital —rather than from more pigs raised from each litter or more efficient gains.

So, although operations will become larger, there will still be room for the relatively small (25 to 50 sows) — but highly efficient —operator who raises and feeds out his own pigs.

2. *Specialization brings fixed investments and loss of flexibility.* Buildings and equipment designed specifically for swine have limited usefulness for other classes of livestock. These investments commit you to a fairly stable swine production program year after year. You cannot be an in-and-outer.

3. *Concentration in numbers and increase in volume intensify disease problems.* Swine disease spreads by contact and traffic between areas—and concentration makes isolation more difficult. Young pigs are more susceptible and have less resistance than older ones.

Fortunately, in recent years increased research activity has improved our understanding of immunity and resistance. This research will lead to solution of the many disease problems which plague hog raisers.

Typical 1970 operations. If we concern ourselves with the man who makes most of his dollars from hogs—and eliminate from our thinking the small and part-time operator—I believe that by 1970 we will see the following types of hog producers.

Commercial sow herd operators. Some farmers will raise and feed out their own pigs. Here's what their operations will look like:

1. Number of sows per farm will run 50 to 500, up to 1,000. Average: 100.

2. Multiple farrowing will be usual practice—6 to 12 litters per year, in good housing.

3. Hogs will be raised in confinement—with mechanical feed- and manure-handling equipment.

4. They'll follow a rotational breeding program.

Meat consumption per person in 1960 is forecast at 161 pounds, up about 2.5 pounds from 1959.

5. Hogs will be sold on a graded basis.

6. Complete, pre-planned vaccination and disease-control program will be followed.

7. Sows will be bred by artificial insemination to high-quality boars.

Other commercial sow herd owners will sell feeder pigs. Their operation outline will look about like this:

1. Number of sows—120 to 500.

2. Multiple farrowing, 8 to 12 litters per year in excellent housing.

3. Rotational breeding program.

4. Sell pigs—priced according to grade—at 30 to 50 pounds.

5. Complete vaccination and disease control program.

6. Practice artificial insemination.

Commercial swine feeders. These farmers will specialize in finishing hogs of from 30-50 pounds to market weight.

1. Number of pigs fed—2,000 to 10,000.

2. They'll use confinement feeding set-ups—completely automated in feed and manure handling, with 200 to 500 uniform pigs per pen. Pigs may be kept on elevated floors with cleaners underneath.

3. They'll use facilities to add soluble medicaments to drinking water.

4. Housing will be good but not elaborate—with insulated roof and walls plus good ventilation to eliminate extremes in temperature.

5. Pigs will be sorted and graded at selling time.

Seed stock producer. His objective will be to use scientific methods to produce and maintain certain superior lines of established genetic composition. Outline of his program will look like this:

1. Number of sows, 100 to 500.

2. Multiple farrowing—six litters per year in good housing.

3. There'll be facilities for complete performance and progeny testing.

4. A complete vaccination and disease control program will be followed.

5. He will sell breeding stock that's been tested and evaluated for specific combining ability with other lines.

America's increased population is expected to require 37 per cent more milk by 1975.

Changes in feeding and nutrition. Since feed represents 70 to 80% of the cost of producing pork, there is a real opportunity in this area for lowering the cost of production.

In the past, research has been concerned primarily with requirements for *individual* nutrients for different classes of swine. Much of our current research is being devoted to studies of feed nutrient *interrelationships.*

Example: One of the most dramatic of these relationships exposed by recent research at Alabama, Michigan, and Wisconsin is the one between calcium and zinc.

Research at these experiment stations has shown that rate of gain may be improved by 50 to 100% by the addition of 50 parts per million of zinc to a ration that appears to be well-balanced. This is less than 2 ounces of actual zinc in a ton of complete feed to correct a small error in the calcium and zinc content of the ration. We are finding out things about protein-energy ratios, vitamin-amino acid relationships, other trace mineral requirements and relationships—and so many others that our whole concept of feeding standard requirements will have to undergo a thorough revision.

Corn has been developed which sets from six to 10 ears on a stalk and grows to a height of six feet. Experiments indicate that corn this height feeds through combines without clogging.

Here are indicators of what's ahead.

We have obtained, for instance, on an experimental basis, faster and more efficient gains on rations which contain less than half the amount of calcium than is now recommended in feeding standards.

We know that normal gains on baby pigs are possible with only 10 to 12% protein in the ration when synthetic amino acids are used.

Baby pigs on high energy synthetic diets have produced a pound of gain on less than a pound of dry matter intake up to 4 weeks of age. This puts them in a class of their own in feed conversion efficiency—even better than broilers. And they are doing it up to much heavier weights.

The potential of the pig is just being scratched. By 1970, we will see things we have not thought of yet. Look for year-around production of 15- to 20-pig litters of meat-type hogs with a feed conversion of 1 pound of gain from 2 pounds of feed. The research is in the works. Only the application remains.

As a hog feeder of the 1960s you are not going to be concerned directly with ration formulation. Formulas will be establish-

ed by the scientists at the experiment stations and in industry.

Some rations may seem a bit fantastic from the standpoint of the origin of nutrients used. The fermentation industry will make a major contribution to the feed bag. Molds and microbial life will make contributions in the form of proteins, vitamins, hormones, and more antibiotics.

The sea water and its fantastic growth of plant life (algae) will supply many nutrients. Synthetic amino acids and vitamins will be used in increasingly large amounts.

Fertilizer stimulates the growth of weeds as well as the growth of crops. Weed control, therefore, becomes doubly important when fertilizers are used.

Enzymes of various kinds will be added to unlock the stored energy of our feeds. Hormones, tranquilizers, antibiotics, medicaments and anthelmintics will all be a part of the feed tag listing.

In the future, the *nutrient content* of the ration will be the thing stressed—rather than the name or listing of the *ingredients* that the mixture contains.

There will be a gradual evolution from the current method of free choice self-feeding of hogs to the feeding of complete pelleted rations, mixed and fortified for specific purposes.

Equipment now is available for metering controlled amounts of supplements and medication into the ration and drinking water at predetermined levels. In the future, water will be used a great deal more as a carrier for soluble nutrients and medicaments. Sick animals usually refuse to eat dry feed but will continue to drink water.

Gestation feeding. Research at many experiment stations has shown that the pregnant sow doesn't require a lot of nutrients from the *volume basis.* However, the *quality* requirements are very critical. The common mistake of overfeeding of energy results in poor reproductive performance because of a deficiency of certain *critical* nutrients.

Investigations show that most sows ovulate from 15-20 eggs or more at estrus. This means a potential of 15-20 pigs or more at farrowing time. Yet we know that the average sow farrows 9 to 10 pigs. What happens to the other 10?

This is currently an untapped source of potential improvement of tremendous significance. More research facts are needed, but the evidence is piling up fast. Indications are that when we tie in this research with work that is

going on in the hormone field—aimed at controlled breeding cycles—we will be able to insure a 50% increase in litter size. This development will come in a few years.

Research results from many Midwestern experiment stations remove all doubt that normal reproduction can be obtained without pasture. Pasture substitutes in the form of silage and dehydrated forage meals are now commonly used. New industry-produced concentrates will be widely available throughout the 1960s.

Swine Housing. Changes amounting to a major revolution are occurring in swine housing today.

Since *environments* which give optimum results for swine of different ages are not the same, *housing* requirements are quite different for the various classes of swine.

In the future, plans for housing will take into account:

1. Environment: Effect of changes in temperature and humidity.

2. Disease control: Isolation during critical periods—very important from birth to 8 weeks of age.

3. Mechanization: To take advantage of all labor-saving devices.

4. Cost: It will have to pay.

Facilities needed for handling the brood sow and her litter represent a much more complex problem than the one for growing and finishing swine. Environment and disease control are the major factors. Feed and manure handling are of lesser importance here. The area required can be limited in size but it must be easily disinfected and cleaned. It must offer a maximum of isolation so as to achieve good disease control during this very critical period.

Advancements in heating, ventilating, and air conditioning will make it possible to install such units in farrowing houses where environment control is critical.

Between 1950 and 1958, the percentage of working wives rose faster among U.S. farm families than among city families or rural families not living on farms.

In growing and finishing units, high temperatures are particularly objectionable. When the temperature gets up to 90° or higher, weight gains come to a standstill and there is even some danger of death losses.

Fortunately, it is not necessary to have absolute control over environmental temperature and humidity for good results. It is only necessary to eliminate the ex-

tremes. For the most part, insulated ceilings and walls plus adequate ventilation will serve to meet the needs. Also fogger nozzles, a wet floor surface, sanitary wallows, and cooling coils in the floor will be used by some hog men.

Since the pig doesn't sweat, cooling the air alone is far less effective than a combination of a wet surface plus air movement—which takes advantage of the cooling effect of the evaporating water.

Diseases and parasites. For many years diseases and parasites have been a major stumbling block in swine production. We are beginning to learn something about antibody production and absorption. We're learning about the defense mechanism of the young pig, and when it becomes completely operative.

We have learned at the Michigan Experiment Station that the young pig gets his antibodies from the colostrum milk of the sow within 24 hours after he is born —and that his own production is inadequate prior to 5-6 weeks of age. It then follows that the sow should be placed in her farrowing environment at least a week before she farrows.

Reason is to allow her to react to antigens present and then produce a colostrum milk rich in antibodies which will protect the pig. Then the pig should be protected from disease stresses associated with mixing with other animals, movement, handling, and so forth, until he is at least 5 or 6 weeks of age.

As a practical producing commercial hog man in the 1960s, you will bring to bear all the elements available to attack the disease problem. Like nutrition, disease involves many relationships. It will yield more to a concerted attack on all fronts than to single isolated measures.

Breeding. Pork has been losing some of its market to broilers, turkeys, and beef, largely due to the fact that consumers want lean meat and little fat. Producer concern is a reflection of consumer reaction to the hog man's product.

Over the years American families have spent, on the average, about 25 per cent of their disposable income for food.

Fortunately, the pig has a variable genetic make-up—and the heritability of the factors which influence the quality of his carcass is high. This means that through selection, carcass quality can be modified rather readily.

Efficiency of gain also responds to selection. But on the other

hand, litter size, which is an important part of sow productivity, responds very slowly to genetic selection.

Years of research, sometimes frustrating and disappointing, are beginning to pay dividends. Swine evaluation or testing stations, breed certification programs, on the farm testing and scientific rotational crossbreeding systems represent developments which can be attributed in part to the work of the swine breeding geneticists.

The development of highly inbred lines should be left in the hands of trained animal breeding specialists. On the other hand, the commercial hog man can and

The male mosquito is unable to bite — he has no proboscis.

should take advantage of the hybrid vigor that comes from a systematic cross-breeding program.

Crossbreeding has been popular for many years, but as with everything else, you do not get something for nothing. Animals of merit must be involved or there is nothing gained.

A successful crossbreeding program is based upon the use of good individuals from good lines. For the most part, our market hogs will be the result of using recognized breeds.

But there will become available an increasing number of specialized lines developed specifically for their known combining ability with other lines. Eventually we will know enough about the genetic composition of the animals used in our breeding programs to accurately predict the result of various crosses.

Reproduction developments. Controlled synchronized breeding cycles have been the goal of research workers and animal breeders for many years. Experimental investigations with certain hormones indicate that this dream will become an actuality during the '60s.

Consider this: If we have the development of *controlled breeding cycles* and *artificial insemination*—accompanied by *genetic improvement of our breeding stock* and the *identification of animals of known breeding potential*—plus reasonable *advances in disease control,* the implications for the hog man are almost beyond imagination.

Just think of the potential of the above developments:

1. All sows and gilts in one herd could be bred in one day.

2. They could be bred by artificial insemination using semen of known genetic composition. This may be stored semen from boars already slaughtered.

3. Sex could be controlled.

4. If desired, all litters could be farrowed the same day during daylight hours.

5. Disease problems would be controlled.

Some of the above represents a little scientific dreaming. On the other hand, some of it is actually quite close to reality.

How can you get ready. In preparation for the 1960's kind of hog production you should be making plans to:

1. Specialize—

- by concentrating on one phase of swine production, or
- in applying scientific information to a full program: sows, pigs, market hogs.

2. Become big enough to develop maximum efficiency in the use of resources. Size will vary with the *type of operation* and your *resources* and *ability.*

3. Increase volume and intensify operation through multiple farrowing and confinement rearing.

4. Plan changes to take advantage of automation and materials handling.

5. Work toward feeding complete pelleted rations.

6. Keep complete records—both production and cost data.

7. Develop housing to meet specific environmental needs.

8. Handle bigger litters—healthier, faster-growing, more-efficient pigs.

9. Use better disease control agents and improve sanitation practices.

10. Use "disease-free" hogs—pigs taken by Caesarean operation—under specific conditions.

11. Produce a quality product and sell on a graded market.

12. Learn more about amino acids, enzymes, hormones, tranquilizers, and other additives as well as vitamins, minerals, and antibiotics.

13. Anticipate the impact of controlled breeding cycles and artificial insemination of sows.

14. Survive (at a profit) in a very competitive, highly-efficient industry in which you have lost a certain amount of flexibility and freedom by the very nature of the system you have developed.

If someone claims that chemical fertilizer harms earthworms, pay no attention. In a 100-year experiment in England, earthworms were most numerous in plots fertilized every year. But the wiggly creatures virtually disappeared in plots where no fertilizer had been used. Worms don't cause fertility; they're a result of it. Organic residues which worms eject are lower in nutrients than what they take in.

Suffolk County Farm News

FUN ON THE FARM

A Collection of Jokes and Humorous Farm Stories

A tribe in Africa was having a terrible time with its food supply because of bad crops. The natives went to the chief who said:

"What we'll do is send a telegram to the Russians telling them that we are having agricultural problems and need their assistance. They will send us seeds and tractors and 100 young technicians to help us.

"Then we will send a telegram to the United States telling them that the Russians are sending us seeds and tractors and 100 technicians."

"This will make the U.S. send us seeds and tractors and 200 technicians.

"When all the technicians arrive," the chief said, "we'll eat them." —*Indiana Farmer*

* * *

"I want my hair cut like daddy's", the little boy said as he climbed into the barber chair, "with a hole in the top."

* * *

A farmer had a wife who was very critical of his grammar. One evening he told her he had a friend named Bill he would like for her to meet.

"Don't call him Bill," she insisted. "Call him William."

When the friend arrived, the farmer said, "Let me tell you a tale."

"Not tale," the wife interrupted. "Say anecdote."

That night, upon retiring, the farmer told her to put out the light.

"Not put out," she exclaimed, "say extinguish the light."

Later in the night she awakened her husband and sent him downstairs to investigate a noise.

When he returned, she asked what it was.

"It was." he explained carefully, "a William-goat which I took by its anecdote and extinguished."

—*Sunshine Magazine*

* * *

Nothing improves your driving like a police car following you.

* * *

An old man had the habit of always prophesying great calamities to his friends. One day he was predicting to a disgusted lis-

tener that a great famine was coming soon, and dolefully asked, "And what would you say, my friend, if in a short time the rivers in our country would all dry up?"

"I'd say," was the tired answer, "go thou and do likewise."

—Capper's Weekly

* * *

The only way to get a 10 year old boy clean is to skin him.

* * *

Up for reelection, the mayor of a small city was making his usual lavish promises to a group of voters. Because of his poor record, he had planted members of his organization in the audience to applaud, but the effect of this was spoiled by a seedy-looking man in the first row who punctuated the silence following each burst of applause with hearty laughter. Finally the mayor pointed to the heckler and said: "Will that gentleman who differed with me please get up and tell the audience what he has done for the good of this city?"

The man rose to the boos of the mayor's henchmen.

"Come, come," persisted the mayor, "speak up. Tell this audience just one way in which you have ever tried to help this city."

"Well, Mr. Mayor," said the man in a loud, firm voice, "I voted against you in the last election."

—Wall Street Journal

Among the footprints in the sands of time some people leave only the marks of a heel.

* * *

Half of the world is said to be engaged in agriculture. That's how the other half lives.

* * *

A tax official had to decide on which side of the United States-Canada border an old lady's newly-purchased house stood. Surveyors finally announced that it was just inside the United States.

The old lady smiled, "I'm so glad to know that," she said. "I've always been told that winters in Canada are terribly severe."

—Hoard's Dairyman

* * *

The lady in the row ahead had talked to her companion during the whole movie, especially during the exciting parts. The man behind her could restrain himself no longer. He tapped her on her shoulder.

"You've talked through this whole show, lady. I think you're an ill woman. You ought to go to your doctor right away and have a yapendectomy."

* * *

An adult is a person who has stopped growing at both ends and started growing in the middle!

* * *

One way to stop people from jumping down your throat is to keep your mouth shut.

Middle age has been described as the time in your life when you want to see how long your car will last instead of how fast it will go. —*Minnesota Farmer*

* * *

This story is told of a country preacher in Alabama. When asked by his congregation to pray for a more abundant crop, he responded:

"Oh Lord, we pray Thee in accordance with the request of this Thy people that Thou send them a more abundant crop; but, oh Lord, Thou knowest as they know, that what they need is deeper plowing, harder work and more manure."

—*American Agriculturist*

* * *

"That baby is going to be a great politician," said the father, proudly regarding his six-month-old offspring.

"Now, how can you possibly tell that?" asked the visitor.

"It's quite obvious," was the father's reply. "That youngster can say more things that sound good and that mean absolutely nothing than any politician I've ever seen." —*Smiles*

* * *

A farmer was trying to sell his horse. After exercising it, he exclaimed to his prospective buyer: "Don't you admire his coat?"

"Coat's all right," said the prospect, "but I don't care for the pants." —*The Farmer*

The pastor of a church on the outskirts of town phoned the local board of health to ask that a dead mule be removed from in front of his house.

The young clerk thought he'd be smart.

"I thought you clergymen took care of the dead," he remarked.

"We do," answered the priest, "but we get in touch with their relatives first."

—*The Dairy Plant Fieldman*

* * *

City girl: "I found a horseshoe this morning."

Farmer: "Do you know what that means?"

City girl: "Yes, some poor horse is walking around in his stocking feet."

—*Iowa Farm Bureau Spokesman*

* * *

A deaf old man invested in one of the new hearing aids that are concealed in your eye glasses. A few days later he returned to the store to express his delight.

"I'll bet your family likes it, too." said the salesman.

"Oh, they don't know I've got it," said the old man. "And am I having fun! In the past week I've changed my will twice."

—*Implement & Tractor*

* * *

Fisherman: "I tell you it was THAT long! I never saw such a fish."

Friend: "I believe you."

A father returned home from his usual day at work in the fields and found his small son sitting on the front steps looking mighty unhappy.

"What's wrong, son?" he asked.

"Just between you and me," the lad replied, "confidentially. I simply can't get along with your wife."

* * *

The trouble with life is that by the time a fellow gets to be an old hand at the game, he starts losing his grip.

* * *

Mrs. Customer called up a country store, asking the price of eggs. Knowing, that she was a bargain hunter, the groceryman said, "We have good, large eggs at 35 cents. Cracked eggs we sell for 10 cents per dozen."

"Crack me a dozen," she said, and gave him her grocery order. —*C. R. Cantrell, The Progressive Farmer*

* * *

Don't be afraid to be called a square. Remember a square has all right angles.

* * *

A reporter went to interview a local celebrity who had reached his 99th birthday. As the interview concluded the reporter complimented the near centenarian and added, "I certainly hope I can return next year and see you reach 100!" "Can't see why not, young man," the old timer replied. "you look healthy enough to me." —*Doug Dankers in The National Future Farmer*

* * *

The hillbilly gal felt strongly attracted to a handsome young tourist from the city. She strode up to him finally and stated, "My paw is the best shot in these parts."

"What does that make me?" he said.

"My fiance," she answered with a sheepish grin. —*The Lion*

* * *

A husband is never as good as his wife thought he was before marriage, and never as bad as she thinks him after marriage.

* * *

A man finally succeeded in buying a parrot at an auction after some spirited bidding.

"I hope the bird talks," he ventured to the auctioneer.

"Talks?" exclaimed the auctioneer. "Who do you think has been bidding against you for the last fifteen minutes?"

—*Suffolk County Farm News*

USDA scientists are trying to find out why red clover, botanically a perennial plant, in some areas dies when stands are only one or two years old.

Four Wheel Drive Tractors in Germany

Comparing the 2-wheel drive tractor, the crawler and the new 4-wheel drive machines . .

E. Pape

Translated from the German by *Herbert Steiner*
Deutsche Agrartechnik

INCREASED efficiency in farming depends to a great extent on machinery. Most important is the tractor. Farm work places unusually heavy demands on it, especially in difficult conditions such as heavy soils, stony fields and steep slopes.

Until recently, only ordinary wheel tractors (rear wheel drive) and crawlers have been available for farm work. The various classes of wheel tractors have been used the year around for most jobs both in the field and out. On the other hand, crawlers have had limited use for the heavy soil tillage of spring and fall, where great power is necessary due to soil resistance. Crawlers have also been convenient when weather conditions made it impossible to use wheel tractors.

However, use of crawlers for light work does not pay because of the high maintenance costs, especially when they are used at high speeds with unsuitable implement couplings. Studies made (in East Germany) over a three year period have shown that the costs of maintaining and owning crawlers range from three to four times those of wheel tractors (rear wheel drive).

Modern parents divide their time between wondering how their children will turn out, and when they'll turn in.

Reprinted from Deutsche Agrartechnik, Berlin, Germany

Furthermore, a study of the time required to complete certain jobs (the jobs were not named) gave the following results:

Job	40 Hp. wheel tractor Time required in minutes	60 Hp. crawler Time in minutes
1	50	70
2	120	140
3	180	200
4	240	280
5	480	1560
6	2400	3800

For all these jobs together the crawler required a total of 43 hours more than the wheel tractor.

Tractors cause soil compaction both by their dead weight and by the vertical components of force of their traction as the wheel turns and transfers this force. This soil packing has a harmful effect on plant growth, but since the force also depends on soil conditions, it is still not certain just where the limit between damage to soil and no damage lies. It is best to be on the safe side and do all we can to prevent soil impaction.

The crawler because of its weight distribution over a large area produces relatively little packing of the soil. The wheel tractors on the other hand have for their support only small ellipse-shaped areas where the pressure is much heavier. The exact measurement of this area of weight support is very difficult to determine because of the depth to which the wheels sink in, and the continuously changing tire pressure. In most wheel tractors the compaction is approximately double that of a comparable crawler.

To make best use of tractors requires that they be moved quickly from place to place. In this respect wheel tractors are much better chiefly because of their greater speed. Crawlers of course have a much greater pull than the wheel tractors because of the large area for transfer of the turning force, and the entire weight of the tractor is used in the transfer of this force.

The red maple wears something red all the year — red buds in winter, red leaves and seed pods in spring, veins under leaves in summer, and scarlet leaves in the fall.

It is desirable to make available a wheel tractor which has some of the advantages of a crawler in using its entire weight for power transfer and, at the same time, has a larger support area on the ground. The four wheel drive tractor fulfills these requirements enough to take over some of the work of the crawler.

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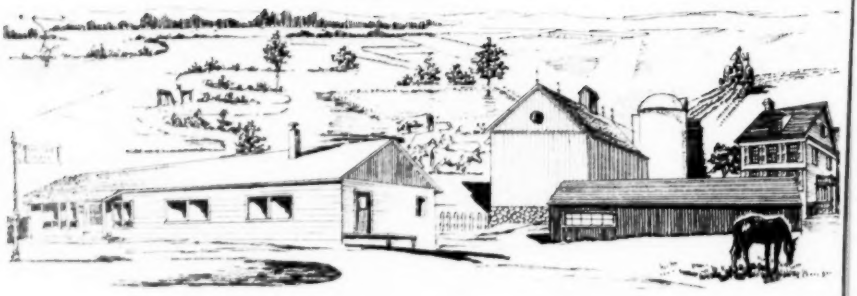


Here's a sketch of our farm where we publish Farmer's Digest. Our 200-acres are planted to corn, alfalfa, grass and trees. We farm — and we publish our magazine on a farm — because we believe that's the only way we can know what other farmers want to read. Farmer's Digest is probably the only farm magazine in the world published on the farm by farmers.

With the four wheel drive tractor, the turning force of the wheel is transferred to the soil by four wheels, which doubles the area against which the wheel pushes. The dead weight of such a tractor should be distributed one third on the rear axle and two thirds on the front axle when standing still. Then in operation the same force will be applied by both front and rear wheels. This requires that front and rear wheels be the same size (preferably large circumference). Of course all the tires require a heavy tread.

We might mention that the rear wheel drive tractor can be adapted to four wheel drive by adding the necessary transmission, but the expense of such an adaptation is often not worth the results, because in operation there is not enough weight to give the proper front wheel traction. In addition the front end

Salt water and minerals are cheap feeds, but they can ward off a lot of headaches for cattlemen.

assembly is usually not strong enough to stand the extra strain.

If the dead weight of the four wheel drive tractor does not exceed 5500 pounds, its price should be less than that of a similar crawler. As mentioned before, the maintenance cost of the crawler is anywhere up to four times that of a comparable wheel tractor, but the upkeep on a four wheel drive tractor is only slightly more than that on the two wheel drive type. If we assume that maintenance on a 60 Hp. four wheel drive tractor is twice that on a similar two wheel drive tractor, then there is still a considerable saving over the upkeep cost on a crawler.

During operation of the four wheel drive tractor the front wheels produce the same pressure on the soil as the rear wheels. Therefore, it is advantageous to reduce the dead

It takes a baby about two years to learn to talk and between 65 and 70 years, to learn to keep his mouth shut.

weight of the tractor. This can be achieved by building a tractor of relatively light weight, but with large size tires. If more weight is necessary for heavy work, this can be added by putting on weights. On jobs using the power take-off, part of the engine power is used on the power take-off. In this case, full utilization of the engine power can be achieved with less weight, and in heavy tillage where com-

paction does not matter so much (because the soil is being deeply stirred up) weight can be added. Enough power is then available for this added weight.

Summary: Four wheel drive tractors will replace many crawlers in farming operations (in East Germany), because they have the following advantages:

1. They can be used on more jobs throughout the year.
2. They are cheaper to service and maintain.
3. They are cheaper to make because they require less steel.

'Prince' Of A Bull Worth A Funeral

Ever heard of a funeral for a bull?

They had one a while back at Quail Roost Farm, Watts Hill Sr.'s place near Durham, North Carolina. It came just a few months after a birthday party for him.

"His name was High Point Prince Maxim," says W. W. Fitzpatrick, manager of the farm, "and he was one of the great breeders of the South."

Fitzpatrick bought the "prince" in Virginia about 1924. "Folks thought I was crazy for paying $7,500 for him; but he proved to be worth a lot more."

The birthday party was on June 1, 1938, beginning of the "prince's" fourteenth year. "We sent out invitations with a picture of the bull bellowing a welcome," said Fitzpatrick. "Got thousands of replies, and a host of telegrams from people declining the invitation with regret."

A girl at the telegraph office in Durham grew curious. "Have you really got a prince out there?" she asked Fitzpatrick. "Can I come out and meet him?"

At the party there was a cake filled with hay. The Hill children put a wreath around the "prince's" neck. And there was a parade of some 40 of the bull's daughters, grandsons and double grandsons.

"We had to kill him a few months later," said Fitzpatrick. "Rheumatism. Fellow asked me what was wrong with him. 'Rheumatic,' I said. 'Romantic? he answered, 'Didn't you want him to be?"

There was a little ceremony at the funeral. Prince Maxim was buried in front of his stall, and his headstone is still there. His head and hooves were mounted and they're on a wall of the farm office.

—North Carolina State College

New Haying Methods

Stems cracked by crusher dry faster.

Hay conditioners and other new developments are cutting drying time and changing old rules of making hay. New methods also are cutting costs, changing rotations . . .

Condensed from Nation's Agriculture

Dan L. Henley, Doane Agricultural Service, Inc.

THE old adage, "Make hay while the sun shines," may still be good advice for everyday living, but it hardly applies to hay production any more. New techniques and machines are changing the old rules of haying.

For instance, the hay conditioner, a popular item in the new machinery line during the hay season last year, cuts drying time as much as 50%.

And the field wafering machine, still in the experimental stage but likely to be in dealers' showrooms within a year or so, may all but eliminate the need for sunshine in hay making.

It is time for some modernization and cost cutting in haying methods, too.

Land prices have reached the point where a hay crop is costly, when you figure the return from investment in land and machinery received from an acre of alfalfa, brome and any other hay, compared to the return from other crops.

Many farmers now question the economics of using alfalfa or clover in their crop rotations.

Yet surveys in several midwestern states have shown that with conventional haying methods and equipment now in use, fully a fifth of the crop is lost.

That's when the weather is just right for haying. In bad weather, crop losses easily climb to more than a third.

Hay, especially alfalfa and other legumes, is a wasteful crop, because its greatest feed value is in the leaves, and they are easily lost. In one Wisconsin test, legume hay was dried in the swath just as it fell behind the mower.

That isn't the normal way of handling hay, but the researchers

Reprinted by permission from Nation's Agriculture, P. O. Box 267, Mount Morris, Illinois

wanted to see just how hay dried. When the moisture content of the hay had declined to 30%, the leaves alone contained only about 10% moisture and crumbled and shattered easily.

New machine saves leaves—hay conditioners are growing in popularity, especially for use with legumes. Several types which generally fall under the classifications of crimpers and crushers are manufactured.

Most experiment station comparisons have shown both types to be about equal in ability to reduce hay drying time. What a conditioner does is break or crush the stems so the moisture inside can evaporate rapidly, and drying of stems and leaves will be more uniform.

Hay must be conditioned within about 15 minutes after it is mowed, while the stems are still unwilted and will crack open easily. Therefore, it is best, and also cheapest, to use a tandem hitch with the conditioner hooked directly behind the mower. Some manufacturers make combination units that mow and condition in one operation.

One very beneficial side effect from conditioning is the improved palatability of hay. Whether it occurs because the hay is leafier, or because the stems are more tender and the leaves greener, is not definitely known.

Also, there may be some advantage to the use of conditioners on grass or legume silage. With conditioning, you have more uniform wilting and better control over moisture content. In dehydrating hay, too, conditioning is beneficial in increasing drying rate.

To justify the cost of owning a

NUTRIENT LOSSES DURING HAY HARVEST

	% Leaf Loss During Harvesting	% Dry Matter Loss In Field	% Storage Losses of Dry Matter	% Protein Losses in Field	% Protein Lost in Storage	% Carotene Loss in Field	% Carotene Storage Losses
Field-cured hay (rain damage)	63	36	3	43	2	94	5
Field-cured hay (no rain)	38	14	6	23	1	80	17
Barn-dried hay (no heat)	28	10	8	17	8	60	33
Barn-dried hay (heat used)	28	12	3	22	3	70	22
Wilted silage	21	3	18	9	9	31	50
Dehydrated alfalfa	7	4	5	8	10	32	45

CHICO STATE COLLEGE, CALIFORNIA

hay conditioner, Arizona specialists say you should plan to condition more than 350 tons of hay a year. However, in the eastern half of the United States where rains are more frequent and the humidity usually higher, a conditioner may be justified for as little as 20 acres of hay.

Operating cost will run from about $1 per ton up, depending on the tonnage yield per acre and whether the conditioning is done in a separate operation or as a mower-conditioner combination.

A conditioner fits in well with another piece of machinery which is already a common sight in western hay fields. It is the self-propelled windrower. Windrowers have long been used in grain fields, but the self-propelled models now on the market cut 12-to 16-foot swaths and eliminate the need for raking, so are ideal for cutting hay, too.

In more humid regions of the country, however, the windrower has not been too successful, because the hay isn't wilted in the swath before it is gathered into a heavy windrow. As a result, drying may be slowed considerably and the risk of weather damage is greater. This is not as much of a problem with grass hays which are usually drier when cut.

The combination windrower-conditioners now on the market solve this problem. Conditioning tends to offset the slowness of drying in the heavy windrows and total drying time is about the same as with hay that has been mowed, allowed to wilt a few hours, then raked with a side-delivery rake.

Other new developments—one further innovation which has helped to speed up hay making is the small bale. Such bales are more easily handled and lend themselves to automatic loading and unloading better than the larger, conventional bales.

Extension service specialists, who have studied the problems involved in pelleting of baled hay with grain rations for feeding cattle, foresee the use of conveyors which will automatically carry small, twine-tied bales from the hay stack to the pelleter without the usual need for one or two men to place bales on the conveyor and to remove the ties.

About 40 percent of all the jobs in the United States are in agriculture. Of the 65 million people employed, about 25 million work in agriculture — 7 million on farms, 7 million produce for and service farmers, and 11 million process and distribute farm products.

Bale loaders and self-loading and unloading truck and trailer

beds have been designed to ease the labor needs in haying too. If the size of the haying operation justifies the investment, it is now possible to make it almost completely mechanical.

Several types of hay driers have been designed at minimum cost. Where rainy weather at haying time is a recurrent problem, a drier may more than pay for itself in improved quality and nutrient value of the hay. Couple a drier into the haying operation with a windrower-conditioner, a baler and an automatic bale loader of some type, and you can put hay into storage, safe from weather damage in a very short time, compared to the time required with conventional methods of handling hay.

An example of the latest design in driers is a drying building developed by Oregon researchers. Rutgers University has a similar one. The drying unit is installed in the building and attached to overhead air ducts. Slat-bottomed trailers with tight sides are filled with bales and driven into the buildings.

Canvas hoods extend from the overhead ducts to the top of the trailers and hot air is forced down through the hay and out at the bottom.

In the off season when there is no hay to be dried, the building can be used for other purposes such as a calf barn, a hog farrowing house or as grain storage.

In original tests with this drier, small, light bales, 27 to 30 inches long and weighing around 35 pounds, were used. They remained tighter after shrinking and were easier to handle.

Cost of drying 28 tons of hay averaged $2.94 a ton, and the researchers estimated that the cost in actual ranch operation would probably be lower.

If and when an economical field pelleter or waferer is developed, there is likely to be a major shift in haying methods and perhaps even some shift in commercial hay producing areas.

Pelleting in the field would eliminate several steps such as baling, handling of bales and drying, and might even eliminate mowing and raking if a machine can be designed to cut, pellet and dry green, standing hay.

Anyone who can read can learn, as all of man's accumulated knowledge has been put into books.

However, it is likely that these machines will be more expensive than hay balers to buy and operate, so the average hay producer would have to depend on custom operators to process his crop.

Once the hay is in pellet or

wafer form, it can be shipped much easier and cheaper than baled or loose hay; therefore, regions which previously had been too remote from hay markets to produce hay commercially may find it a paying crop.

Besides all of the mechanical means of maintaining hay quality, it is necessary for you to grow the right varieties and cut the crop at the proper time.

California management specialists say the stage of maturity at cutting time is more important in determining hay quality than the variety grown. This is especially true with alfalfa, which rapidly decreases in protein content and palatability as it matures.

Though hay-making methods are considered by many crop authorities to be antiquated and inefficient, the use of accurate methods of analyzing and grading hay, coupled with the new equipment and techniques that have been discussed should rapidly pull the quality of hay back in line with other crops.

NUTRIENT CHANGE OF ALFALFA DURING MATURITY

Stage of Maturity	Protein	Fat	Fiber	N-Free Extract	Calcium	Phosphorus
Before bloom	18.6	2.6	23.7	37.0	2.22	0.33
1/10-1/2 bloom	15.4	1.6	28.5	36.7	1.47	0.24
Past bloom	12.9	2.1	31.8	36.3	1.10	0.20

MORRISON

Here's Where

Do you know where these every-day phrases came from?

Thanks for nothing.
The sky's the limit.
Give the devil his due.
A peck of troubles.
Let the worst come to worst.
A finger in every pie.
Every dog has his day.
A wild goose chase.

Every one of them appeared in the same book, "Don Quixote", written more than 350 years ago by Miguel de Cervantes.

—Vee-Gee Messenger

'Boosters' Important

The new "wonder drugs" combined with a sound feeding program, help produce bigger and better beef animals . . .

Condensed from
New Holland Grassland News

AS THE last of the bags of feed went into the farmer's truck he reached down and pulled off one of the formula tags

After studying it intently for a couple of minutes, he turned to his wife and said:

"It's mighty hard to tell from that tag whether we're buying feed or drugs. All this about vitamins, minerals, antibiotics and the like. Sounds like a doctor's prescription!"

Such a comment is not so far out in left field as it might seem when you consider that many feed formulas today may include as many as 60 ingredients with tongue-twisting names.

As a matter of fact, the feed manufacturer's formula room has taken on the look of the prescription department at the corner drug store.

Three growth-boosting drugs have been getting most of the headlines: antibiotics, hormones and tranquilizers. Sensational rate-of-gain and feed-conversion reports are still coming in on this trio of "wonder" drugs.

But it now appears that these three spotlight stealers will have to move over for another star: the enzymes.

Scientists are finding that enzymes not only speed livestock gains, but also improve feed efficiency by improving a steer's ability to digest starches and proteins.

Tests at Iowa State University show an average 12% increase in rate-of-gain and a 7% feed saving from a combination of enzymes called Agrozyme.

These gains were made on top of stilbestrol, included in the finishing ration fed to steers. So the enzymes, is seems, are now full-fledged partners of the antibiotics, hormones and tranquilizers.

Feed manufacturers have a tough time keeping up with new developments. New growth-boosting drugs for livestock are reported almost daily.

Reprinted by permission from New Holland Grassland News, New Holland, Pennsylvania

A rival to stilbestrol has shown up. In Missouri tests, hexestrol produced slightly greater beef gains than stilbestrol. The new hormone-like material hasn't been approved yet, but it will bear watching, researchers believe.

Awaiting Food and Drug approval is Tapazole, a thyroid inhibitor which has had tremendous advance billing. Tapazole has boosted beef gains as much as 17% by itself. In combination with stilbestrol, Tapazole added an extra 13% kick. When fed atop both stilbestrol and Aureomycin, Tapazole still pushed steer gains an extra 10%.

Tapazole lowers metabolism, thus reducing the amount of food burned up as energy and increasing body weight.

A new antibiotic that hog raisers may be using soon is erythromycin, being tested in starter and growing rations. Pigs getting 10 grams per ton of starter between four and eight weeks of age gained 19.5 pounds in that time. This compared with 9.6 pounds for untreated pigs.

Stilbestrol has the highest performance record of all fattening cattle feed additives, according to a summary of experiments made at Iowa State University.

Twenty college experiments with stilbestrol showed a return of nearly 16 to 1 on a return per-dollar-of-cost basis. The return for antibiotics in 15 experiments was about 2½ to 1. In two experiments, Tapazole gave a 3-for-1 return.

Cleared for cattle feeds almost five years ago, stilbestrol is now being fed to an estimated 85% of all cattle on feed in this country.

Researchers are still working with stilbestrol, however.

University of Illinois animal nutritionists got 20% greater gains on summer pasture by using stilbestrol implants. They reported the cost of such implants at 10 cents per steer.

At the same agricultural college, investigators found that implanting steers on pasture does not spoil the effect of a later implant on the feedlot.

The world's largest animal, the blue whale, feeds almost entirely on shrimp, generally less than two inches in length.

Work at the Dixon Springs Experiment Station in Illinois showed that steers implanted on pasture and again on drylot gained while on feed at the rate of 3.25 pounds a day. This compared with gains of 2.95 pounds for steers implanted only on pasture.

As a result, the University now

advises feeders to buy previously-implanted steers, treated at least 150 days earlier, and then implant again on the feedlot.

The drug Tapazole is under test, but its use has not been cleared by Food and Drug officials.

Iowa scientists found that Tapazole-fed steers had an average of 0.18-inch more fat covering over the loin, 1.5% more fat in the rib sections when they separated the lean, bone and fat. Chemical analysis of the rib-eye muscle showed a 15% increase in intra-muscular fat, an indication of marbling.

Their use as growth boosters is, of course, only part of the story of how the new wonder drugs can help you make more profit from your livestock operations.

High rates of antibiotics in swine feed will help control such vicious diseases as infectious scours, atrophic rhinitis and even leptospirosis.

But no matter how many "wonder" compounds are discovered, you'll want to remember that additives and drugs don't replace good quality feed and good, sound management.

Hormones Improve Feedlot Gains

Feeding of hormones to feedlot cattle has been recommended for several years. They have been used both orally in the feed and as ear implants. Additional gain with less feed has made feeders consider its use profitable.

There are instructions for use on the containers in which these products are purchased, says U. D. Thompson, extension animal husbandman. These instructions specifically state the length of time that cattle on oral feeding must be removed from feed containing the hormone prior to slaughter. Some products require that animals be removed from such feeds at least 48 hours before slaughter. Thompson cautions that implanted cattle are not to be slaughtered for a certain number of days after the implants are administered. Certain products require 120 days prior to slaughter.

Anyone using or considering the use of hormones by either of the above methods should acquaint themselves with the proper use of the product, the husbandman emphasizes. This applies to hormone use with any cattle intended for slaughter. *—Texas A & M College*

New Rust Alarms To Protect Your Corn

Specially bred corn varieties to serve as a world-wide "warning" system . . .

Condensed from
Western Crops and Farm Management

A NEW instrument to aid science in the battle against rust is being developed by University of Wisconsin plant pathologists. The instrument will be eight specially bred varieties of rust-susceptible corn, according to J. G. Dickson, plant pathologist.

Dickson compares the use of these new varieties to the nation's air defense early warning system. Scattered throughout the world will be plots of this corn. When one of the varieties is attacked by rust, the scientist will have enough information to allow him to take defensive measures.

This "rust alarm" is the result of a joint project started in 1928 between the University of Wisconsin and Purdue University. Corn varieties from all over the world were collected. From these, eight resistant lines were selected. Each one had an inherited susceptibility to a single race of rust and was resistant to the other races.

Parent Stock

The parent stock for this "rust alarm" is B-14. It is a type of corn that is susceptible to all races of corn rust. Through selective breeding between these resistant varieties of corn and B-14, eight different isogenic—genetically identical except for one gene —strains were developed.

Each strain of B-14 is susceptible to one specific race of the eight races of corn rust, according to Dickson. It has inherited resistance to the other seven races of rust from its foreign parent stock.

Here's how this corn will aid scientists, farmers and seedmen. Through identification of diseased corn plants in the B-14 lines, the plant scientist will know just what race of rust is attacking. He will then select a type of corn that has an inherited resistance to the race of rust and cross it with a high producing variety being used. This crossing process sub-

Reprinted by permission from
Western Crops and Farm Management, 4511 Produce Plaza, Los Angeles 58, California

stitutes a resistant characteristic for the disease-susceptible characteristic. In other respects the corn variety will remain the same.

Seed Protection

By using this new system, Dickson says the plant scientist can have seed stock in production the second year and available to the farmer the beginning of the third year after the rust is first detected.

The present system of fighting corn rust requires at least 10 years to get a resistant corn variety to the farmer. The scientist first has to identify the race of rust before he can start developing the resistant corn variety. Hard work and luck have kept scientists ahead in the battle against rust.

A complete rust resistant variety of corn can't be used because rust modifies its ability to attack. It can alter itself to such a degree that the once resistant variety of corn will be susceptible to an attack. When this has happened, plant scientists have had to start another 10-year cycle of developing another resistant corn variety. The use of B-14 will shorten this time 80%.

Disease Spread

A world-wide alarm system is needed because rust can travel far and fast. Dickson says there is some danger of rust reaching the North American continent by way of imports, travelers, planes and ships. Once here, it has a free ride by wind and other means to all parts of the country.

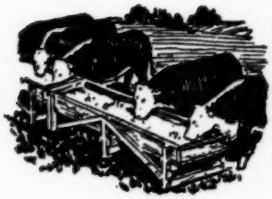
During the summer, tropical air masses carry spores, the small seeds that reproduce rust, from Mexico northward into Canada. During the winter months, the spores get a free ride back to Mexico by the artic air masses.

It is then possible for the whole North American continent to become infected with rust in one or two years' time. With this danger, Dickson points out the necessity of knowing what type of rust is attacking corn in other countries. With a little warning we can have resistant corn varieties ready for such an outbreak, he says.

Scientists predict the future will bring greater selectivity in chemical control of weeds without damage to crops or lawns.

This whole idea of "rust alarms" can be applied to all plant diseases. In some cases development will be difficult, as in the case with a similar "rust alarm" development program for small grains. Here the plant scientist is confronted with over 200 races of rust. But it can be done, says Dickson, we're just opening the door on a new era in fighting plant disease.

23 Management Recommendations For Growing and Finishing Beef Cattle In Dry Lot



Important steps in a sound management program . . .

Condensed from American Feed Manufacturers Association Pamphlet

Management Is Important

PROFITABLE conversion of grains and supplements in growing and finishing beef cattle is influenced by good management techniques in the feed lot.

For many years, agricultural groups have issued management recommendations. Common to all was the lack of uniformity. The adoption of uniform recommendations by the Nutrition Council of the American Feed Manufacturers Association is the result of an intensive study of all available research. These recommendations are based upon the carefully considered judgment of more than 200 authoritative sources, including the nation's Land Grant Colleges, Experiment Stations, the U. S. Department of Agriculture and the Feed manufacturing industry. These recommendations are as follows:

Feed and Water Facilities

1. Have the top of the feed bunk 24 inches high for calves and 30 inches high for older cattle. Calves are considered to be animals weighing up to 600 pounds; animals weighing more than 600 pounds (including yearlings and big cattle) are referred to as "older cattle".

2. Provide feed bunks about 8 inches deep for calves and 8"-10" for older cattle.

3. Allow the following amount of feeder space per head for grains and other concentrates:

Hand feeding
Calves — 18"-24"
Older Cattle — 20"-30"
Self feeding
Calves — 6"-8"
Older Cattle — 8"-12"

4. Provide the following roughage rack space for free choice feeding with liberal grain or other

American Feed Manufacturers Association, 53 West Jackson Boulevard, Chicago 4, Illinois

concentrates feeding:

Dry roughage: 6"-9" per head

Silage: 12"-18" per head

When little or no grain or other concentrate is fed, double the smaller figure shown above.

5. Make feed bunks 24"-30" wide when feeding from one side and about 36" wide when feeding from both sides.

6. Provide plenty of clean fresh water at all times.

Allow one linear foot of open water tank space for each 10 cattle; or one automatic watering bowl for each 25 cattle. For example, a six foot feeder open on both sides has 12 linear feet of feeding space. The same principle applies to watering space.

7. A satisfactory water temperature range in winter is 40-45°F.; in summer 60-80°F.

Feed Lot Facilities

8. Provide the following lot space:

A. Paved lots — 50 to 100 square feet per head.

B. Dirt lots — 150 to 200 square feet per head. (More is desirable under some soil and climatic conditions).

9. Provide a paved area of at least 10 feet around waterers, feed bunks, and roughage racks.

10. Allow slope of ¼ to ½ inch per foot in paved lots and ½ inch or more in dirt lots, depending on soil and climatic conditions.

Provide beef cattle housing as economically as possible. Open sheds or wind breaks are usually adequate.

In open sheds allow 20 to 30 square feet of space per head for calves; allow 40 to 50 square feet per head for older cattle.

12. Provide artificial shade in hot climates unless cattle have access to natural shade. Allow 15 to 25 square feet of shade for calves; 25 to 35 square feet for older cattle.

Build shade 8 to 10 feet high.

13. Provide bedding except in mild climates to help keep cattle dry, comfortable and healthy.

Recommended materials include: straw, corn cobs, sawdust, shavings, peanut hulls, etc. Use the type that is readily available at lowest cost.

On-the-farm disease prevention is less costly than the disease.

Mounds covered with cobs or other bedding in open lots are desirable.

14. Use the type of fencing that is readily available at the lowest cost. Build fences at least 60 inches high.

15. Provide rubbing devices that dispense insecticides to help

control external parasites and make cattle more comfortable. These devices should not replace other external parasite control measures.

16. Provide facilities for restraining and handling individual animals to minimize production losses and prevent injury to personnel.

General Management

17. Provide salt free choice at all times.

18. If hogs are allowed to follow cattle fed whole grain, allow one hog for each 2 to 3 calves or one hog for each 1 to 2 older cattle. If grain is rolled, ground or cracked this practice is of lesser value.

19. To reduce waste and improve feed utilization, grind, roll or crack all grain which is fed.

20. Dehorn calves and yearlings and tip the horns of older cattle.

21. If practical, feed steers and heifers separately.

22. Worm cattle when the need is demonstrated.

23. Treat cattle for external parasites when the need is demonstrated.

Asphalt Barnyards

We'll probably see more barnyards paved with asphalt in the future.

Ed Bruns, University of Wisconsin farm engineer, says asphalt gives good results where proper materials are used and recommended construction details followed. You need to get a qualified contractor to do the job.

The first part of the job is to thoroughly clean away all foreign material and manure. Then roll the bare soil.

For the base use crushed limestone or slag. Spread uniformly and pack with a roller weighing not less than five tons. You need a packed layer around four to six inches deep on sandy or average soils. If the soil is heavy clay, the base course needs to be six inches thick or more.

Bruns says the asphalt pavement should be a "dense and stable mixture" which will permit easy cleaning with a tractor and scraper or front end loader. Cows will slip on a surface that is too smooth.

He recommends the asphalt be two inches thick. Make it three inches, where the pavement butts up to feed bunks and watering facilities. Plan a slight slope for good drainage.

Put the asphalt down hot. Spread uniformly and pack with the roller used on the base material. —*University of Wisconsin*

Prevent Hidden Hunger In Your Crops

How to diagnose deficiency symptoms on your farm . . .

Condensed from American Potash Institute Pamphlet

BEFORE we can eliminate *hidden hunger,* we must know what a hunger symptom is. There are many degrees of nutrient hunger:

1. Complete crop failure at seedling stage.
2. Severe stunting of plants.
3. Specific leaf symptoms appearing in different degrees at varying times during season.
4. Internal abnormalities, such as clogged nodes.
5. Delayed or abnormal maturity.
6. Obvious yield differences, with or without leaf symptoms.
7. Poor quality of crops, including unseen chemical composition differences—as in protein, oil, or starch contents; in keeping or storage qualities; etc.
8. Yield differences which can be detected only by careful experimental work. Here, surely, is *hidden hunger.*

Deficiency symptoms — or hunger signs — alone are not enough to d i a g n o s e nutrient needs, because (1) the problem is to prevent hunger rather than correct it; (2) when yields rise, visual symptoms become less obvious or disappear; (3) no outstanding symptoms have been identified for certain deficiencies; (4) symptoms appear only at extremely low fertility levels; (5) some symptoms appear late in the season.

The job of determining symptoms — what they mean, what they are from, why they exist — is an important job.

Just because a nutrient is present as a natural part of the soil or as fertilizer added to the soil will not guarantee the plant is getting that nutrient from the soil. One of the best ways to tell what nutrients your crop needs . . . or already has . . . or doesn't need is to use the plant itself as an indicator. That is done by systematically s a m p l i n g your plants for testing during the

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growing season.

Plant testing is done by collecting sample plant materials — usually certain selected leaves or other plant parts — and having a qualified laboratory determine the concentration of major and minor nutrients. The nutrient levels are then compared with adequate or "safe" levels determined by earlier green house and field trials.

Rapid chemical tests are also made on the growing plant in the field. An advantage is that many tests can be run in a short period of time with a minimum of equipment.

Plant testing may reveal the wrong form of a particular nutrient has been applied . . . or materials have been applied incorrectly in relation to the root zone . . . or moisture was insufficient to make the materials effective. It may reveal excessive moisture has washed the materials from the root zone. It may show a need for changes in fertilization and management, like plant spacing.

When to take plant samples, which parts to take, how many to take — all these questions should be taken up with your official agricultural adivsor.

Do you have areas on your farm where the crops show no hunger but where top yields are seldom obtained? If so, you are in need of a good soil testing program to isolate and build up such areas.

By following a regular program of soil testing, the farmer can avoid low yields and low profits caused by hidden hunger in his crops. Before soil testing reached its present development, many farmers waited for hunger signs to tell them they were running out of a plant nutrient — an inefficient, dangerous method. When plants reached this stage, profits had long been declining.

Most farmers who use soil tests today are not interested in recommendations for average production. The fact they use soil tests indicates they are above-average farmers interested in producing top yields (and quality) to match the economic framework in which they operate.

Never run after a bus, a woman, or an educational theory. There will be another one along very soon.

And one of the most important steps toward an accurate soil test is the right kind of soil sample. Soils vary from field to field — even from place to place in the same field. In non-uniform areas, separate samples of 15 to 20 borings should be taken from each type of land.

For authentic details on how to

take a soil sample, depth of sample, its thickness, the tools to use, what size area to sample, etc., consult your agricultural advisor.

To get top yields, most successful farmers have their soil tested regularly and adjust their fertilizer use to fit the *individual situation* — an important practice.

Aureomycin Fed To Dairy Calves Helps To Reduce Scours

The major advantage of feeding aureomycin to dairy calves is the reduced incidence of scours (diarrhea) and not the temporary increase in growth rate, according to livestock scientists of the U. S. Department of Agriculture. This was cited by Robert L. (Bob) Steele, associate Extension dairyman at West Virginia University.

In experiments conducted by USDA's Agricultural Research Service at Beltsville, Md., test calves were fed aureomycin as part of their diet for the first 90 days after birth. A smaller percentage of the antibiotic-fed calves developed scours than the control animals which received no aureomycin.

Differences between groups in the incidence of scours were not large, but were consistent for all ages and all periods during the trials. Three of the control calves died of diarrhea during the trials.

Aureomycin-fed calves gained an average of 19 pounds more than the control group for the 90-day period. When the antibiotic was removed from their diet, however, these calves gained less rapidly than the controls. At 6 to 12 months of age there was no significant weight difference between the aureomycin-fed calves and the controls.

Measurement of the feed intake of all calves used in the experiment indicates that aureomycin stimulates appetite and rate of weight gain and increases feed efficiency while it is being fed. After aureomycin-feeding is stopped, rate of gain decreases and appetite returns to normal. Research also has demonstrated that these feeding advantages diminish as the calves grow older. Addition of aureomycin to the diet for this purpose is seldom profitable after calves reach two months of age. *—West Virginia University*

Stubble Trouble

Follow these seven steps to stubble mulch a field covered by 12,000 pounds per acre of wheat straw . . .

Condensed from "Run For Cover With Stubble-Mulch Farming"

DRYLAND wheat farmers began burning stubble fields when the combine came into use some 30 years ago. At first they shied away from stubble-mulch farming because they were sure the practice reduced yields.

Then nitrogen fertilizer came into wide use and straw yields were doubled in some cases. Farmers became convinced that the only way to handle the increased stubble was to burn and plow—mulching was too difficult and required new types of machinery.

Agronomist Merrill Oveson and ARS Engineer Ted Horning of the Pendleton Station, Pendleton, Oregon, decided to prove experimentally that stubble mulching was possible even with two or three times the normal residue.

They spread the straw over a newly harvested wheat field to produce the equivalent of 12,000 pounds of plant residue per acre. "We figured if we could stubble mulch with 6 tons of residue per acre, then we could convince farmers that they could do it with the normal amount of stubble," explained Ted Horning.

Various types of tillage implements were used and from the results of this reseach, Horning came up with seven general suggestions for stubble mulching in heavier residue:

1. Use a straw spreader on combine to scatter residue uniformly over field.

2. Leave stubble standing over winter unless weeds are a problem. Standing stubble gives greater erosion protection and tends to hold snow. If fall tillage is necessary, use sweeps at shallow depth —4 to 5 inches—to cut weed roots.

3. Stubble bust ahead of spring tillage, or sweep and follow with a skew treader. Wide sweeps have fewer shanks to cause plugging. Duckfoot blades, spaced at 12 inches, give more surface cultivation for control of small weeds, volunteer grain and cheat-grass.

4. Follow first spring tillage immediately with skew treader or

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"Run For Cover With Stubble-Mulch Farming," John Deere, Moline, Illinois

center drive rod weeder to close soil pores, save moisture, and start cheat control.

5. If mulch is still too long and fluffy or if cheat is a problem, skew tread again after about 7 days of drying weather.

6. Rod weed for rest of summer only as necessary to control weeds, going only deep enough to keep rods submerged. Rod weeding does not have to be done at any regular intervals. Excessive working of the soil tends to destroy the residue cover, pulverizes the surface soil, lets moisture escape, and nullifies the benefits of mulching.

7. Seed with 14-inch-spaced deep-furrow drill with wide shovels on moderate slopes. Seed with semi-deep-furrow single disk drill with 10- to 12-inch spacing on steeper slopes.

It should be emphasized that there is not just one best way to stubble mulch. Each farmer needs to experiment on his own, using information furnished by the USDA and various state experiment stations.

Sheep Foot Rot Control

Sheep foot rot a contagious, bacterial infection, can put a sheep man out of business unless eradicated, or at least controlled, emphasizes Dr. F. A. Hall, Purdue University extension veterinarian.

Severe lameness, explains Dr. Hall, is the main symptom of this disease. It starts with a small sore and eventually envelopes the inside of the hoof. Diseased tissue smells foul. Foot rot develops more rapidly when sheep are on wet ground, such as swampy pastures or muddy barn lots.

—Purdue University

FARMERS ARE GETTING A GROWING NUMBER OF NEW NEIGHBORS — city people are moving out among them — factories locate out in the country. Non-farm people now outnumber farm people by a 5 to 3 ratio in rural areas. Winthrop Rockefeller, Chairman of the Arkansas Industrial Commission, says: ".. the same technology which made the 40-acre farm obsolete also freed the factory from its ties to the big city. No longer do large numbers of workers need to live within walking distance of their place of work."

—Agricultural Institute News

White Death For Canada Thistle

New chemical kills those persistent patches of Canada thistle by robbing plants of chlorophyll. . .

Condensed from The Furrow

YOU can murder Canada thistle and have the law on your side.

In fact, the 1959 Iowa legislature rewrote that state's weed law to require any owner or operator in control of lands infested with thistles to control them and prevent their seeding. This includes private, railroad, or public lands and is aimed chiefly at Canada, bull and sow thistles.

The best weapon is amino triazole—a weed killer that robs the plants of chlorophyll, the green color matter essential for plant growth. Thistle leaves absorb this chemical killer and conduct it to all parts of the plant, including the extensive root system.

First symptom of successful control is a change of color. The plants turn from green to yellow to white, then die. New growth from roots may emerge for some time after treatment but is usually off color and short-lived.

For best results, Oliver Lee, Purdue weed specialist, recommends that amino triazole be applied in the spring after plants have grown 12 inches or more, but before the buds are open. If plants are mature, mow them and spray regrowth during late summer.

The amino triazole (Amitrol) on the market is 50 per cent, water-soluble powder. It should be used at the rate of 8 pounds per acre (4 pounds of actual material) or approximately 2 ounces per square rod. When applied with a field sprayer and boom, use 8 pounds of amino triazole in 30 gallons of water per acre. With a spray gun, use 8 pounds in 100 gallons of water. Small patches may be sprayed with a knapsack sprayer, using 2 ounces of chemical in 1 gallon of water per square rod. Although not so effective as amino triazole, 2,4-D also can be used to kill unlawful thistles.

Good fences will make good neighbors.

Reprinted by permission from The Furrow, Moline, Illinois

53 Acres And A One-Man Forestry Operation

A unique story — how a relatively few acres provide a pleasant living . . .

Condensed from Tree Tips

THIS is the story of a remarkable 53-acre patch of timber and the ambition of a man to work in the outdoors, be his own boss, earn a pleasant living with enough money left over for an occasional vacation trip.

The 53 acres of white and Norway pine with a scattering of white oak have been owned by Gilbert Moll, and before him, his father, William, since the 1870's.

The stand was logged off in the early days of the pinery, but since has been protected from fire.

Today this wholly integrated one-man forestry operation is unique in the state and the nation.

New Techniques

The forest is alongside highway 54, two miles east of Wisconsin Rapids, Wisconsin.

Gilbert Moll bought the 53-acre portion of the tract south of the highway from his father in 1928.

Moll has developed new operational and sales techniques over the years, changing from horse to tractor skidding, setting up his own sawmill instead of paying a portable operator to do custom sawing and adding value to the lumber produced by building and selling a house each year.

Still, the one-man operation is as much a necessity as it is a matter of pride in doing all the work himself.

The return from the small forest does not allow for a crew of woods-workers and carpenters. And there is another factor — Moll does not like the red tape

Reprinted by permission from Tree Tips, Trees For Tomorrow, Inc., Merrill, Wisconsin

of book work, filling in forms and other aspects of being an employer.

Walking down a meandering woods road Moll tells of the time table he follows in managing and utilizing to the fullest extent the raw material his forest produces.

In early fall he thins deformed and other trees that suppress the growth of sturdy saplings. These trees are converted into firewood.

During the winter Moll harvests the mature stock, using a 5 horsepower chain saw. He cuts 15,000 board feet on the average. This is less than the annual growth — Moll figures he's taking the interest from his forest and leaving the capital — his growing stock.

When the logs are on the ground he bucks them into 8-, 10- and 12-foot lengths, then trims the branches.

Moll removes the tapered side posts from a 2-runner sled to use as a track for loading logs. The front end of the sled is raised with a hydraulic lift from his tractor, and he skids the logs to the sawmill. One tree length makes up a load.

45-Foot Runway

The sled is dragged to the top of a small rise and the logs rolled down the incline to the deck along side the mill runway.

His 40-inch circular saw is powered by the 22 horsepower tractor-engine. A system of levers operates the 15-foot carriage on a 45-foot runway.

A special chain-pulley device starts and stops the engine and moves the logs back and forth on the carriage.

The boards, 4 to 12 inches wide, are stacked to dry in two open sheds. Moll has an electric portable planer in the drying sheds. He has another building equipped with power tools for sizing and finishing.

Lumber For Houses

Moll completes the cycle in the summer, using his lumber to build houses. He's built 15 homes over the years, some in neighboring townships.

All the lumber comes from his forest. Cabinets and special work are done at nearby mills, using Moll's lumber. Moll makes all his sash, doors and interior trim in his woodworking shop.

The gingko tree is unknown outside of Asia now, but petrified remains have been found in various parts of U.S., especially in state of Washington.

Does he have any trouble selling his houses?

"With the last one I ran an ad in the paper one day," Moll recalled. "Two days later the house was sold."

It takes about 10,000 board feet to build each house. The rest of his lumber is sold to other builders or to individuals. Slabs and blocks are sold for fuelwood. Moll heats his own home — which he built himself, naturally — with oak and pine slabs.

100 Per Cent Utilization

By using a circular instead of a band saw Moll figures that about 20 per cent of his logs wind up as sawdust. However, this doesn't go to waste. Moll carries out his utilization 100 per cent by sacking the sawdust and selling it for mulch.

Moll will be 65 next year — the usual retirement age for most folks. However, retirement doesn't seem to have entered his mind.

He subdivided the far east end of his tract into lots, is constructing an access road from the highway and plans to build houses on the lots.

Nothing Atypical

With his completely integrated forestry operation Gilbert Moll hardly can be considered a "typical landowner."

But there's nothing atypical about the growth and vigor of his trees, some pointing 100 feet skyward, nor the income he derives.

That's something any forest landowner can aim for by applying the same sound forest management principles that Gilbert Moll has used for 30 years, and his father for a half century before him.

Specialists Say Dairy Cows Need More Salt

Dairy specialists say that many dairy feeds are low in salt and the amount of salt a cow needs depends on her size and the amount of milk she is producing.,

A Rutgers University specialist said experiments have shown that dairy cows should be given about ¾ of an ounce of salt a day for every 1,000 pounds of body weight and ½ ounce in addition for every 20 pounds of milk produced.

University of Illinois dairy specialist, Ralph Johnson, reporting that many dairy feeds are low in salt urges adding one and a half pounds of salt with each 100 pounds of grain mixture.

In addition to the salt mixed in the concentrate mixtures, both specialists recommend that the cows have constant access to salt on a free-choice basis. —*Salt Institute*

Remember Those Horse Stories?

"One was eager and willing, friendly and smart — all horse. She was teamed up with an old cluck which was the stupidst, clumsiest horse I've ever seen. But at the end of the day, when the other was bushed, that old fool was as fresh as when she started!"

Condensed from American Agriculturist

David Myers

WHENEVER farmers gather, the talk is apt eventually to turn to horses. There's a deep regret in most of us as we see the last of them going.

Take the other night, for example. Fred told the first one. "We were going to town with a load of hay and the horses balked. So Larry says, 'Light a fire under 'em.' So I did, and they moved just ten feet."

Nobody cracked a smile. Ken said, reminiscently, "Fred, you remember that white mare we had? She was a beauty, but the first time we hitched her up, we found out why she went so cheap. She wouldn't go. You couldn't make that horse move. Dad was disgusted and he told me if I could drive her, I could have her. I soon found out the trick. You had to lead her to start her, but once you got her going, she'd practically trot all day.

"We put her on a one-horse cultivator, and one of us would lead her to get her going, and the other one would get ready to trot behind her. We used to work two in the same field, so when one got tired of running along behind her, he'd holler and the other would leave his horse and come over and relieve the first one on the fly. That horse sure got a lot done, but you didn't want to stop her.

A little pause, and then he continued, "We had another balky horse once, though, that we cured. We put a chain around her neck and towed her. Speeded her up considerably. After that, if we just laid a chain on her neck she'd move."

Clyde put his feet up on the stove rail and tipped his chair back. "When I was a kid, we had a nice mule. I used to ride him to take the cows to water.

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One day I was late, and when I got there, he'd already taken them. After that, he always did it alone. He'd take them and give them time to drink, but then he brought them back a-hustling. There never was any dallying with him behind them."

He eyed his shoes thoughtfully. "That same mule knew the noon whistle, and when he heard it, he'd turn and go to the barn. It didn't matter if you were right in the middle of a windrow; he was going to the barn, and he went."

Ken chuckled. "I'll never forget one time I was on the binder

It is often easier to defend our beliefs than to live up to them.

and the horse ran away. We went around that field three times, tying bundles the size of a broomstick. Maybe you think that wasn't some mess to shock!"

Old Joe, the elder member of the crowd, added, "I had a nice driving horse when I was just a young buck. I used to drive her down to my girl's house and when the old folks took her out one day, she turned in there. Gave me away.

"After we'd been to a dance, I'd wrap the reins around the whipstock and go to sleep and she'd take me home. One night, she ran it a little fine going around a bend where there was a culvert. She made it all right, but the buggy didn't, and I woke up in the creek."

"Horses are usually pretty wary," suggested Ken. "We put up a new electric fence, and one of our horses made its acquaintance. When we came to work the field next to it, he left an acre at that end of the field. Couldn't get him any closer.

"After that, we fenced him with just one wire, and we never turned the juice on. He never got out. Guess he never tried it."

The stories went on:

"We had a mare that we used for logging. She was smart enough so that if she felt the chain slacken, she'd step off the path."

"My dad carried mail with a horse, and she stopped at every mail box. She knew just how many steps to go beyond so Dad could reach the box perfectly."

"That's like one I knew that carried a city milk route. There were streetcars and all kinds of traffic, but she'd go around a block and meet the milk man on the other side when he came through the alley."

"We had a nice sorrel mare. I went into her stall one morning to back her out, and she wouldn't move. I finally persuaded her,

and she'd been standing on a rat, and wasn't going to get off it."

At this point, I chipped in. "Horses have a mind of their own, all right. There was one old bay that Dad let us kids fool with. We'd hitch her up and take her up around the 'flatiron' . . . it was about two miles altogether. She'd loaf along, complaining and trying to turn around all the way up the road, but when she'd get across the crossroad and onto the other fork, she'd suddenly cheer up and run all the way home without stopping until she got in the barn.

"She wouldn't mind us kids if she could help it, but she wouldn't hurt us, either. I was riding her bareback one time. She was fat as a tub, and I began to slip. I slid all the way down around and dropped off under her. She stopped right there. Never touched me. I could have sworn she laughed at me, though.

Dairy cows enrolled in the national DHIA program returned an average profit to herd owners in 1958 of $78 per head over total estimated cost of feed and care. In contrast the average cow in the U.S. provided her owner only $28 above estimated expenses during the year.

"We had a lot of fun with that horse. She was smart and had a lot of ginger to her. I was sorry when Dad decided the cars were going too fast for us to be out on the road with a buggy."

Ken remarked thoughtfully, "There's as much difference between horses as there is between folks.

"In one team we had, one mare was a beauty. She'd prance along with her head up, eager and willing, keeping her ears cocked and her eyes open. She was friendly and smart. That was a real horse.

"She was teamed up with an old gray cluck that didn't have anything to recommend her. She didn't have a straight leg on her, and she was sulky and mean. She'd nip me in the seat of the pants when I leaned over, or if she could, she'd pin me up against the side of the stall.

"She'd walk into the side of a barn if you didn't stop her, or step in a woodchuck hole and never see it. When she drank, she'd have her head in clear up to her eyes, and come snorting and blowing. She was slow to see anything, and fast to panic. She was the stupidest, clumsiest horse I've ever seen.

Fred nodded. "Yep, they're all different. I've known a lot of animals, and most of them were friendly, but there's nothing quite

like a horse.

"It's not the same, driving a tractor. I used to pick up arrow heads and see bones and broken dishes, when I plowed behind a team. Sitting up on a tractor, you don't see anything."

The Old Gent shook his head. "No, it's not the same. I hate to see the horses go."

U. of I. To Test Open Pond Manure Disposal

Lagoon-type manure disposal ponds will be tested for sanitation, odor and capacity at the new University of Illinois Moorman Swine Research Farm.

Six-inch sewer pipes will carry waste matter from 21 research buildings housing more than 1,800 hogs to the farm's three test ponds, explains Ed Hansen, U. of I. agricultural engineer.

Hansen says several midwest farmers are using lagoons. There is a definite need, however, for further research on the new system.

For example, farmers are not sure how large ponds should be for best results. U. of I. researchers will use the three test ponds—labeled Pond A, Pond B and Pond C—to answer this question.

Pond A will have 20 square feet of surface area per hog; Pond B, 40 square feet; and Pond C, 60 square feet. By using control valves, researchers will reduce or increase waste matter entering Ponds B and C to find the maximum load they can carry.

The scientists believe this type of manure disposal system will meet the strict sanitation conditions necessary for effective swine research. They can clean floors as often as necessary by simply hosing manure into drains located in each building.

Researchers believe volume of manure and wash water going into the ponds will average from two to four gallons per hog per day.

—Illinois Agricultural Extension Service

SHEEP ARE LESS SUSCEPTIBLE to serious bacterial or virus diseases than other classes of livestock. So the key to successful management of a farm flock lies in controlling parasites which attack sheep. For help along this line, ask your local county extension agent or vo-ag teacher for Farmer's Bulletin No. 1330—"Parasites and Parasitic Diseases of Sheep."

Insecticides To Use On Livestock

Here's the latest on how, what and when for external parasite control.

Condensed from The National Wool Grower

Dr. Norman D. Levine, University of Illinois

IN recent years many new insecticides have been introduced to control external parasites. New ones are being developed continually.

Some are too hazardous to be used indiscriminately, and it is difficult to decide which should be used for each specific purpose.

Recommendations below are based in part on *Insecticide Recommendations of the Entomology Research Branch for the Control of Insects Attacking Crops and Livestock, 1959 Season, USDA Agricultural Handbook No. 120.* Unless otherwise indicated, the dips and sprays are emulsions or suspensions in water.

The use of insecticides is an adjunct to good sanitation and management. It is not a substitute for them.

Sanitation will greatly reduce the fly problem. Eliminate all breeding places, such as manure, garbage, heaps of rotting vegetation and other accumulations of organic material.

Inspect and quarantine all animals before adding them to your flock. One animal infested with lice, keds, or mange mites can give them to the rest of the flock.

Insecticides are poisonous. Do not contaminate mangers, feed or water with them. Do not allow sprays to run off into streams. Read the labels on the insecticide containers, and follow their directions exactly. Do not use more than the recommended amounts or concentrations. Protect yourself when you apply them.

Consult your veterinarian for further information.

Keds

Dip. Use 0.25 percent lindane, 0.25 percent toxaphene, 0.25 percent DDT, 0.1 percent pyrethrins plus 1.0 percent synergist (piperonyl butoxide or MGK 264), or a suspension of eight ounces of 5 percent rotenone powder per gallon of water. Do not use lindane on emaciated or lactating

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animals. Do not use DDT or toxaphene on milk goats. Repeat after two or three weeks if necessary, but do not use lindane, DDT, or toxaphene within four weeks of slaughter.

Spray. Use 0.5 percent lindane, 0.5 percent DDT, 0.5 percent toxaphene, 0.5 percent malathion, or 0.25 percent Bayer 21/-199. Repeat as needed, but do not repeat spraying with DDT. Do not use lindane on e*maciated* or lactating animals. Do not use lindane, DDT, or toxaphene within four weeks of slaughter. Do not use Bayer 21/199 within 60 days of slaughter. Do not use malathion, DDT, toxaphene, or Bayer 21/199 on milk goats. Do not use Bayer 21/199 on sick animals or on animals less than three months old; spray animals three to six months old lightly. Do not use with pyrethrins, allethrin, or synergists.

Lice

Dip. Use 0.025 per cent lindane or 0.25 percent DDT, methoxychlor or toxaphene, or a suspension containing one to two pounds 5 percent rotenone dust in 100 gallons water. Immerse thoroughly. Repeat dipping after two to three weeks if necessary, but do not repeat dipping with DDT. Do not use DDT, lindane, or toxaphene on emaciated or lactating animals. Do not use lindane, DDT, or toxaphene within four weeks of slaughter.

Spray. Use 0.05 percent lindane or 0.5 percent DDT, methoxychlor, toxaphene or malathion, or 0.25 percent Bayer 21/-199. Spray animals thoroughly. Repeat after two to three weeks if necessary, but do not repeat spraying with DDT. Do not use lindale, DDT, toxaphene or Bayer 21/199 on milk goats. Do not use lindane on emaciated or lactating animals. Do not use lindane, DDT or toxaphene within four weeks of slaughter or Bayer 21/199 within 60 days of slaughter. Do not use Bayer 21/-199 on sick animals or those less than three months old; spray animals three to six months old lightly. Do not use with pyrethrins, allethrin, or synergists.

Dust. Use 0.5 percent to 1.0 percent rotenone; dust animals thoroughly. Repeat after two to three weeks if necessary.

The fuse is the "safety valve" of the electrical circuit. Use the correct size fuse for the circuit and you cannot overload it. because the fuse will blow before the wiring can get too hot.

Ticks

Dip. Use 0.025 percent to 0.03 percent lindane or 0.25 percent toxaphene. Immerse thoroughly.

Repeat after two or three weeks or as needed. Do not use on milk goats. Do not use within four weeks of slaughter.

Spray. Use 0.025 percent to 0.03 percent lindane, 0.5 percent toxaphene, 0.5 percent malathion or 0.25 percent Bayer 21/-199. Spray animals thoroughly. Repeat after two or three weeks or as needed. Do use on milk goats. Do not use lindane or toxaphene within four weeks of slaughter or Bayer 21/199 within 60 days of slaughter. Do not use Bayer 21/199 on sick animals or on those less than three months old; spray animals three to six months old lightly. Do not use with pyrethrins, allethrin or synergists.

Mange Mites (Sheep Scab)

Dip. Use 0.06 percent lindane. Do not use within four weeks of slaughter.

Recently the USDA has also approved toxaphene as a dip for scab. For complete details contact your county agricultural agent or vocational agriculture instructor.

Wool Maggots (Fleeceworms)

Smear. Use EQ-335 (containing 3 percent lindane). Apply to the infected area and three inches around it.

Spray. Use 0.25 percent Bayer 21/199. Spray thoroughly. Do not use on sick animals or on those less than three months old; spray animals three to six months old lightly. Do not use with pyrethrins, allethrin, or synergists. Do not use within 60 days of slaughter.

Screw Worms

Smear. Use Smear 62 (containing 35 percent diphenylamine) or EQ-335 (containing 3 percent lindane). Brush or smear on the wound and surrounding area twice during the first week and weekly thereafter until the wound is healed. Use the minimum amount necessary to treat the wound.

Spray. Use 0.25 percent Bayer 21/199. Spray wounds thoroughly and wet entire body. Do not use on sick animals or on those less than three months old; spray animals three to six months old lightly. Do not use with pyrethrins, allethrin, or synergists. Do not use within 60 days of slaughter.

The U. S. Bureau of Census forecasts that this summer our population will soar to 180 million. As of September 1st of last year, our total population was 178,252,000. The admission of Alaska and Hawaii to the Union provided 745,000 new citizens. During the year ending June 30th, there were 4,280,000 births; 1,646,000 deaths; and a net immigration increase of 254,000. —*Weekly Newsletter*

Keep Production Costs Down For Larger Layer Profits

How much profit you make on your laying flock depends largely on what it costs you to produce a dozen eggs, say extension poultry specialists at the University of Missouri.

Here are some tips from the specialists that will help keep your costs down and your profits up.

Select a breed or strain of birds you know is bred for high egg production. Aim for a production of 240 eggs per hen.

Feed a balanced ration containing at least 15 to 16 percent protein. Watch the cost of your feed and use as much home produced grain as possible to keep feed costs down.

Plan a definite flock replacement system. Usually it's best to raise your own pullets, say the specialists. That way you will not be bothered with someone else's diseases and problems. Start chicks between January 1 and April for a brood system. Large producers may want to consider a two brood system for most efficient production.

Keep your investment cost in housing and equipment at a reasonable figure. Average total investment need not be higher than $3.50 per bird, including both laying and rearing facilities.

Watch your labor costs. A good goal is to get the job done with one hour or less per hen per year. Remember too, there are many ways to save labor without investing in expensive equipment. Consider such things as automatic waterers, track and feed carrier, bulk feed handling, and arrangement of equipment in the laying house and egg room.

You can reduce your hen depreciation costs by keeping hens for 15 to 16 months of continuous lay, say the specialists. This practice will also provide you with more large size eggs during the fall months when prices are normally higher.

A heathy flock is essential. Vaccinate for Newcastle, bronchitis, and fowl pox. Keep birds free of parasites. Control cannibalism by debeaking birds at housing time or when an outbreak occurs. Keep visitors out of your poultry buildings. And, if you should notice symptoms of a disease, get a reliable diagnosis and give early treatment.

Finally, the extension poultrymen say an accurate set of records are a must. Use them as a guide in correcting mistakes in management, comparing poultry returns with those from other farm enterprises, and for planning for the future. —*Missouri Farm News*

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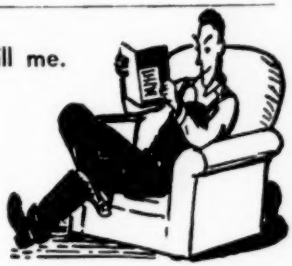


Here's a sketch of our farm where we publish Farmer's Digest. Our 200-acres are planted to corn, alfalfa, grass and trees. We farm — and we publish our magazine on a farm — because we believe that's the only way we can know what other farmers want to read. Farmer's Digest is probably the only farm magazine in the world published on the farm by farmers.

Nematode Trouble Is Increasing

Cropland's No. 1 public enemy isn't a new threat . . .

Condensed from
Virginia Extension Service News
K. H. MacDonald

A GROWER often feels that there are now a great many more plant pests than were present in the past, and to a certain extent, that is correct.

Although quarantine measures do slow down the distribution of pests to new localities, insects and plant pathogens do move from spot to spot. Moreover, the modern tendency to concentrate increased acreages on a few crops has the effect of forming breeding grounds wherein insects and pathogens can multiply before moving to other fields. However, in many cases a "new problem" is due to a pest which had caused damage for a long time before its true nature was recognized.

All of these statements, but especially the latter, are true of plant-parasitic nematodes. Nematodes move by means of their own facilities at a very slow rate in the soil, but can be moved at a rapid rate in roots of transplants or in soil adhering to bags or machinery. Once moved to a new site, they usually take several years to build up a population which can damage a crop, but continued growth of one susceptible crop may hasten the process. Unfortunately, too, many of the improved practices which increase root growth and crop yields simultaneously increase the multiplication of nematodes which feed on the roots. The advantages for a good crop with recommended practices of fertilization or irrigation far out-weigh the disadvantages of the presence of nematodes, but sometimes the grower gradually becomes aware of losses from nematodes in certain areas of this field which were previously thought of as trouble-free. In most cases, however, damage from nematodes was either unrecognized as such by either the grower or scientist, or not thought to be of much importance.

Nematodes can be loosely defined as unsegmented roundworms. They have a nervous sys-

Reprinted from Extension Service News, Virginia Polytechnic Institute, Blacksburg, Virginia

tem and a simple "nerve ring" which possibly serves as a brain. Certain plant-parasitic nematodes are known to be attracted or repelled from roots, but no form of eye or nose is known to exist. Nematodes pass their food through a central digestive tract. Both males and females are recognizable, but many forms do not require a male for reproduction.

Nematodes which are parasitic on man and other animals have been rather thoroughly studied. These include the ascarids which attack the large intestine, the worms which cause trichinosis, pin worms, and hook worms. Such forms are not harmful to plants, and plant-parasitic forms are harmless to animals.

The nematodes which are parasites on plants are generally too small to be seen without a microscope. One exception is the group known as root knot nematodes. These attack a wide variety of crops, causing gall-like enlargements which cut off the flow of nutrients and water to and from the aerial portions of the plant. The early stages of this nematode are worm-shaped and may sometimes be seen with a hand lens or the naked eye. The galls they cause can often be seen rather readily if one carefully digs roots from infested soil and washes away the adhering soil. Because of their size and obvious effect on plants, root knot nematodes have been known for some time. They are well adapted to the warmer regions and cause losses in some but not all fields.

Most of the other nematodes which damage plants are not so readily seen, and the damage they cause is often more subtle. While they may increase in size with maturity, they remain worm-shaped and invisible to the naked eye. They may cause symptoms no more specific than a stunting or yellowing of plants which could be confused with the effects of a shortage or excess of water or fertilizer.

It must be emphasized that not all nematodes are harmful. Most of the numerous types to be found in the soil are either harmless or indirectly beneficial to higher plants. Some even feed upon parasitic forms and help keep these in relatively small numbers. Presence of harmless nematodes makes the examination of soil samples for parasitic

A dollar spent for lime will generally return a profit of 5 to 1 in increased grazing, forage or crop yields. Liming is the first step in building soil fertility.

forms rather exacting and time-consuming.

The various agricultural agencies do not have the personnel required to examine all cropland for the presence of plant parasitic nematodes. Moreover, the results of such an endeavor would be of questionable value. Certain nematodes are known to attack certain plants, but it is rarely known how many nematodes are necessary to cause noticeable losses in yields of crops. Much depends upon soil conditions, crop tolerance, time of year, and many other factors not yet evaluated. Particularly frustrating is one complication observed by nematologists: a relatively small number of a given form may be found in one field where the damage has been great, and conversely, a large number where the damage was small . . .

Field studies can be made to determine the effectiveness of nematicides applied by different methods and — just as important — to determine whether or not nematicides do more harm than good when applied in soil where nematodes are not known to be a problem.

If you should decide to apply a nematicide to a field because of past indications of nematode attack, it would be well to leave an area untreated. Comparisons of yields from treated and untreated regions might tell you whether or not the application was worthwhile. Keep in mind, however, that one year's experience will not tell you whether or not the chemical would be of value in following years in the same or similar fields.

Bruised vs. Coarse Forage Silage

Almost 10% more dry matter can be recovered in silage made from finely chopped and bruised forage than from coarsely cut forage.

In experiments at the USDA's Agricultural Research Center, Beltsville, Md., bruised-forage silage also was more acidic than chopped-forage silage and contained larger quantities of the desirable lactic acid.

Butyric acid and ammoniacal nitrogen — both undesirable in silage — were lower in the bruised silage.

Scientists who made the tests feel the better quality silage produced by bruising was due to rupture of a high percentage of plant cells. This caused the fermentation to be more rapid and of a profoundly different nature than that occurring in coarsely chopped forage. —*New Jersey Farm and Garden*

Is Corn More Profitable Than Meadow?

Before answering, read this discussion . . .

Condensed from Crops and Soils

R. H. Blosser, Ohio State University

OFTEN a farmer would like to shift his cropping operation from one of growing mainly corn to one of growing primarily meadow (pasture or hay). Or, he may wish to make just the opposite change from meadow to corn.

The deciding factor in such a move, of course, is which crop is the most profitable to grow. This can generally be determined by comparing the relative yield and market price of both crops. How the crop is to be used—whether sold on the market or fed to livestock—also has an important bearing on the profit received.

In the Cornbelt Area, where livestock is included in most farming operations, farmers will have difficulty maintaining a reasonable hourly income if they take corn completely out of the cropping program in favor of meadow. This is because corn yields are usually high, while beef or milk production per animal unit is often relatively low on the meadow land. In addition, the price received for milk or beef is often low.

The profits from selling corn or forages are based on the cost of producing a marketable yield. A drop in the price of corn relative to hay would mean that the yield of hay required to match the profits received from corn would not need to be as great. If corn went up in price, however, the opposite would be true. It would require more hay per acre to be as profitable as growing corn. These comparisons are shown in the chart on the following page.

A 120-acre farm was used to

Reprinted by permission from Crops and Soils, 2702 Monroe Street, Madison 5, Wisconsin

develop this theoretical chart. Ninety of the acres were under cultivation in a corn, wheat, and hay-pasture rotation; 20 acres were kept for permanent pasture and 10 for miscellaneous purposes. Dairy cows and hogs made up the livestock program when corn was included in the rotation. When no corn was raised, it was assumed that dairy cows alone constituted the livestock program and that the meadows would have to be reseeded every 3 years.

When the two crops are to be fed, a farmer averaging 40 bushels of corn an acre can afford to shift his operation to meadow and buy grain if his dairy herd averages more than 7,000 pounds of milk per cow and if milk sells at $3 per 100 pounds.

If the price of milk is $4 per 100 pounds, each cow would have to average only 5,000 pounds of milk for meadow to be

CORN VS. MEADOWS

I. WHEN CROPS ARE SOLD:

If you get this yield of corn and can sell it for $1.25 a bushel	You would have to sell about this much hay at $25 a ton to make meadows as profitable as corn
50 bushels (per acre)	2.3 tons (per acre)
75 bushels (per acre)	4.0 tons (per acre)

Following are some examples which show when a farmer would find it more profitable to raise corn than meadow. From the same figures can be determined when it would be more profitable to raise meadow.

If a farmer was to average 50 bushels of corn an acre and sell it for $1.25 a bushel, he would need a hay yield of 2.3 tons an acre selling at $25 a ton to equal the corn profit.

But if the farmer increased production to 75 bushels of corn an acre and sold it for $1.25 a bushel, a 4-ton yield of $25-per-ton hay would be necessary to be as profitable as the corn.

more profitable than corn averaging 40 bushels an acre.

Other factors besides profit enter into a shift from one of these crops to the other. Farmers who quit raising corn may be able to get along with less machinery. But, more meadow creates other problems. Hay may seriously increase the seasonal demand for labor, especially during the first-cutting harvest. Hay is usually more difficult to put up than corn when weather conditions are unfavorable. Also, there is a more dependable market for corn than for hay or silage.

Before making a shift in crops, a farmer should check all aspects of growing the other crop. Obtaining the help of a county agent or other professional worker will help to eliminate much of the risk involved in making such a move. When evaluated properly, a shift in crops can be profitably and advantageously done.

II. WHEN CROPS ARE FED:

If you get this average yield of corn per acre	and	this price for your milk (net)	You can afford to stop raising corn and buy grain if your milk production per cow exceeds this amount
40 bushels		$3.00 per cwt.	7,000 pounds
55 bushels			12,000 pounds
70 bushels			15,000 pounds
40 bushels		per cwt. $4.00	5,000 pounds
55 bushels			9,000 pounds
70 bushels			11,000 pounds

The above chart indicates whether corn or grassland is the more profitable, considering crop yields, milk production and prices.

Something To Yak About

Cross a Registered Holstein bull and a female yak and the resulting offspring won't yak yak all the time.

When it comes to production, the "Yaksteins" — which seems to be as good a name as any we can think of — take after pa's side of the family. In fact, a recent wire service dispatch from Tokyo quotes Communist Chinese authorities to the effect that one "Yakstein" will out-produce eight yaks.

The Chinese, who are experimenting with the cross in Tibet, hail it as a "great leap forward in animal husbandry." According to Peiping radio, the animals have "taller horns and thinner hair than the yak, especially about the neck and on the tail, and inherit the black and white irregular patterns of the bull."

All of which may eventually add up to good news — even if no one seems to know just how much milk eight times an average yak's production would amount to.

At any rate, Chinese Communists should be healthier, happier and easier to get along with now that they've found a way to put milk and butter on their boiled rice!

—Holstein-Friesian Association

The War On Weeds

New chemicals, new tactics score gains as scientists zero in on really tough weed problems . . .

Condensed from Capper's Farmer

Norman Reeder

DOES this past winter's cranberry scare signal a cutback in the use of chemicals to fight the battle of crops vs. weeds?

Replies to this question, put to weed scientists of our north central states and western Canada at their conference held in Winnipeg last December, drew virtually a stock answer from both college and industry research men:

"Certainly it should not. In fact, any serious cutback in the use of herbicides is simply out of the question."

No one doubts that chemical weed control has become part and parcel of today's farming, like hybrid corn and the farm tractor.

This was not to belittle the need for more basic research in how herbicides work. What happens to weed killers in the soil? Scientists are probing for a better understanding in order to learn how to design chemicals to do a better job in more crops.

But farmers have nothing to fear from today's weed killers, explained Dr. B. J. Rogers of Purdue University—if they will faithfully follow directions. Read the label. Follow it to the letter.

Herbicides are put on the market with the express warning that they are to be used as directed. None can be sold without thoro tests of their usefulness and safety. Both the United States Department of Agriculture and the United States Department of Health, Education, and Welfare must be satisfied.

Anyone who recommends use of these chemicals other than as stated on the label may be held liable under the law.

Progress was the keynote of the Winnipeg meeting. New chemicals. New ways to use chemicals already approved for some crops. New ways to apply them.

Two new chemicals that kill or stunt wild oats without injury to

Reprinted by permission from Capper's Farmer, Topeka, Kansas

grain got major attention at the conference.

To Canadians of the prairie provinces—the great spring wheat area—wild oats is the most fearsome of weed pests. Seeds lie dormant in the soil until time to plant spring grain crops. Then they quickly germinate and outgrow the crop, cutting yields almost to the vanishing point in bad infestations. Wild oats seed ripens and shatters shortly before time to harvest grain crops, then lies in wait until the next growing season. Or for several seasons.

Only four of our states have a wild oats problem—North Dakota, South Dakota, Montana, and Minnesota. But in the area affected, the problem is serious.

The Mississippi delta is extending itself into the Gulf of Mexico each year, building up with soil from 30 of our states. It grows at the rate of two farms per minute, or some 2 miles each year.

To come up with a chemical that can take out wild oats without serious harm to grain crops of similar growth habit sounds like an impossible assignment. Yet scientists of two chemical companies have products going into farm trials in 1960 after wide-scale testing in plots.

Several farmers in the U. S. wild oats area will have a chance to try Spencer Chemical Company's new *Carbyne* in 1960. Trials will be checked closely by extension workers and the company's own representatives. Only a limited amount of *Carbyne* will be on sale this spring. See your county agent to find out if any will be available in your area.

Carbyne is a post-emergence spray. It has to be used when wild oats are about at the 2-leaf stage to be effective. It acts as a suppressor, rather than as an outright killer of the weed pest. Yield increases of barley, wheat, and flax looked highly profitable in plot tests last year.

Canadian farmers should have a chance to try Monsanto Chemical Company's *Avadex,* a preplant type of herbicide that is disked into the soil ahead of the grain crop. It kills wild oats seed as it sprouts. Monsanto expects to have the chemical registered in Canada on a no-residue basis in time for the 1960 planting season.

Plot tests have shown this herbicide to give substantial yield bonuses where wild oats is a serious weed in flax, barley, rape, sunflower, and sugar beets. Tests with wheat are to be continued. Some weed scientists now think the quest for a one-shot herbicide that will kill all weeds is chasing

a will-'o-the-wisp. Instead, they are looking over combinations of weed killers, new and old, to find teams that do an outstanding job.

A combination herbicide due on the market soon is Monsanto's new Randox-T. This is a combination of their outstanding grassy weed killer, Randox, with a broadleaf weed killer (TCBC) which is less damaging to corn than 2,4-D.

In plot trials, Randox-T at quite low rates has checked weed growth to the point that one cultivation—possibly two in some cases—gives good control. Breakdown of the chemical in the soil appears to be rapid enough so there is no effect on soybeans the following year.

Ice covers 1/10 of the earth's surface and water covers 71% more.

Like Randox, the combination herbicide is irritating and calls for the same precautions by the user.

Monsanto expects to get clearance in time to put Randox-T on the market for use as a pre-emergence herbicide for corn in 1960.

Geigy Chemical Company's well-known Simazine, and its younger sister, Atrazine, both scored high in most tests in 1959. Both control broadleaf and grassy weeds when used as a pre-emergence weed killer in corn.

Like other pre-emergence herbicides, both depend on rain falling soon after application. When rainfall is short, Atrazine comes thru with a better performance. Atrazine also showed up commendably when used as an early post-emergence treatment on small weeds soon after corn comes up.

Results with pre-emergence herbicides in sorghum varied so much that Dr. Fred Slife of Illinois, who summed up the 1959 research, reported as follows:

"At the present time, good cultural practices plus 2,4-D post-emergence seem to be the best weed-control method for sorghum."

Nurserymen and other horticulturists have found that 2,4-D and 2,4,5-T are harmful to a number of sensitive crops. But newer weed killers are fast coming into use to give fruit and vegetable growers the kind of low-cost weed control available to growers of field crops.

Du Pont's urea-based weed killers, Monuron and Diuron, are among the headliners in this department. Others are Simazine and Amitrol.

Farmers, dealers, and extension men, concerned with the practical everyday use of weed killers on the farm, are confused over

the ever-growing number of new herbicides.

Last year, for example, 22 new compounds to kill weeds went on test. Few, if any, of the weed killers brought out in the last 10 or 12 years have ever been dropped. How can anybody but a full-time weed scientist know what's what in herbicides?

This problem is not as tough as it looks, said Iowa's veteran weed specialist, E. P. Sylwester. In any one neighborhood, or any one county, only a limited number of crops is grown. If you concentrate on weed killers tested out for these crops, the list is cut down to manageable size.

The local weed meeting is the place to go for up-to-the-minute information on weed killers that work on the crops in your area. Meetings where farmers can talk with dealers in farm chemicals, the county agent, the college weed specialist, and industry representatives are growing in number.

The well-known and cheap chemical, pentachlorophenol—it's widely used as a fence-post preservative—is also a good weed killer. It has proved to be one of the best in tests on soybeans at three state colleges. But nobody can recommend it as a herbicide.

The reason is that no tests have been conducted to clear it for use as a herbicide. Such tests are costly. If one of the several manufacturers of pentachlorophenol were to do the research, nothing would prevent the others from cashing in without the expense.

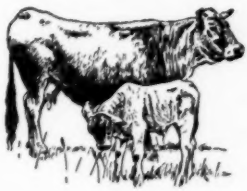
So manufacturers have no choice but to put their research dollars into developing brand-new chemicals which they can protect by patent.

In the meantime, pentachlorophenol—and some other chemicals just as good—plays no part in the battle to beat down weeds.

The only way to handle this problem, said one company representative, is for college researchers to make the tests. To clear one chemical would call for the labor of as many as six good research chemists for several months. It would cost a lot of tax dollars. But, this representative said, it is a good investment for farmers.

Four major diseases now cause cows to lose their calves, and some of these diseases also affect swine and sheep. They include brucellosis, trichomoniasis, vibriosis, and leptospirosis. Signs of these diseases may be very similar, and confuse the owner. If animals lose their young, or milk production drops, or if they fail to conceive, the owner should have diagnosis made by a veterinarian.

Do Your Calves Cost Too Much?



Careful attention to details can cut costs considerably . . .

Condensed from Hoard's Dairyman

J. M. Wing, Department of Dairy Science, University of Florida

CALF raising is surprisingly expensive.

Records at the Ohio station show that feed alone costs $168 for the small breeds and $217 for large breeds. Labor, management, breeding, housing, and incidental expenses must be added. A survey in New Jersey showed that the average total cost was $338 for large breeds with feed accounting for $218, or 61 per cent of the total.

Low-producing herds can be improved most rapidly, of course, by buying animals of improved breeding. Even very high-producing herds may purchase some replacements to help maintain high quality through planned breeding. But the genetic quality of most herds can best be improved through a definite breeding program, and this involves raising the calves.

Then, too, purchased replacements have shorter productive lives than do home-raised heifers. In Connecticut, cows milked by the dairymen who raised them stayed in production for an average of 4.0 years compared to 2.6 years for purchased replacements. In Florida the differences were greater, 4.8 years for home-raised and 2.5 to 3.0 years for purchased heifers. Even though raising calves is expensive, home-raised replacements are worth considerably more than most heifers which can be purchased.

Still there is no reason to spend more than is essential to early maturity and productivity; and some of the usual costs of raising replacements may not be necessary. Careful records over a period of 7 years at the Florida station show that the cost of producing the small breeds should be not more than $184 under conditions in that area. This figure, however, does not account for calf losses.

If Colostrum is Saved . . .

Most of the savings can be made on feed. Previously it seemed necessary to use some whole

Reprinted by permission from
Hoard's Dairyman, 28 Milwaukee Avenue, West, Fort Atkinson, Wisconsin

milk. That insures a good start, and thus it is worth the cost. However, when the best use is made of colostrum, calves can be raised using *no saleable whole milk*. All the colostrum is saved and used according to one of two plans. With either system, all the colostrum is collected and kept refrigerated.

1. Using the preferred system, any surplus which accumulates is put into plastic bags or cardboard cartons and frozen. All calves receive colostrum as the only milk for the first four days.

Colostrum (a) activates the digestive tract, (b) supplies extra vitamin A (all calves are born with a deficiency of this vitamin), (c) furnishes a high nutrient intake since it is much higher in solids than normal milk (18 per cent compared to 12 per cent), and (d) supplies much needed antibodies to protect the calf from disease.

Following the fourth day, the colostrum is diluted with an equal volume of reconstituted skim milk which is made by mixing a pound of milk powder into a gallon of warm water. This stretches the colostrum over a period averaging three to five weeks, depending on how many of the bulls are raised.

Animal-grade skim milk powder is often available at a cost of 10 cents or less per pound. This is the same as the powder used for human food but it has been in storage so long that it may have become slightly stale. Commercial milk replacers also can be used to dilute colostrum.

Enough For 200 Calves . . .

Surprising though it may seem, the colostrum for as many as 200 calves can be saved with one home-size freezer, if ordinary refrigeration is available. This is because most of the surplus is accumulated during the first part of the calving season when a large portion of the cows are fresh.

Later the colostrum production is about right for current needs. Then at the last of the season when few cows are freshening and many calves are rather large, the frozen surplus is used.

Adequate forage and feed are keys to success in livestock farming.

2. A simpler system involves feeding colostrum without freezing or dilution but it also includes a definite plan. Start each milk feeding using colostrum, and start with the youngest calves going successively to the older ones. This is accomplished simply by lining the calves up in order as they are born.

This system insures a supply

of colostrum for the youngest calves and most of them will receive colostrum for the first two weeks. By this time colostral antibodies are not as important as for the newborn calf because the body of a 2-week-old calf has begun to acquire natural immunity. Vitamin A also has been stored and the digestive process is likely to be vigorous.

Colostral antibodies are associated with gamma globulin. It appears that the gamma globulin, as such, is absorbed directly into the blood stream for only a few hours after birth. During recent years, however, dietary antibodies in milk fed to older animals have repeatedly proved effective. Until this function becomes clear, the value of colostral antibodies for older calves must be considered with some reservation.

100 years ago 80% of things people used were produced at home.

Calf Develops Early . . .

From several recent research projects, results show that all four compartments of the calf's stomach are functional at an earlier age than was previously thought. Many present management practices are based on the assumption that the calf essentially is a single-stomached animal like the pig or colt. This is a false assumption.

Work at the Florida station showed fermentation to be well established in the rumen of calves 20 to 30 days old. Close observation showed that rumination occurred in calves by the second week of life. At the Vermont station, well-established digestive ability was reached at ages of 2 to 3 weeks in calves receiving good roughage compared to 18 weeks in similar calves on poor roughage.

The trick seems to be getting young calves to eat solids at significant levels. The Iowa and New York workers showed that fatty acids caused the stomach of young calves to develop very rapidly. It seems significant that these fatty acids are formed in the first stomach as the result of bacterial action on solid feeds. At the Florida station, the importance of solid feed was further emphasized by the fact that 4 out of 5 calves raised to 11 months of age on milk alone, failed to develop normal rumen tissue.

English, New Zealand, and United States researchers have shown that high-quality forage is as well digested by 9-week-old calves as by mature animals. These facts can be used to make feeding simpler and less expensive than it has been. They should not be interpreted to mean that young calves can be fed just like

mature cows. Lack of body capacity makes use of roughage somewhat limited during the first year.

Use of the nipple pail is a sound practice, but it can be discontinued when rumen fermentation is well established. Open pails are perfectly safe for feeding most calves that are 3 weeks of age or older. This saves labor and equipment. Of course, all pails must be scrupulously clean.

Start Solids Immediately . . .

Hay and concentrate feeds may be offered to young calves at any time. Some calves begin eating solids the first day of their lives.

The concentrate feed need not be a complex, expensive, special feed. Recently at the Florida station, a concentrate feed was fed experimentally composed of ground snapped corn, citrus pulp, and solvent process cottonseed meal. This was a very coarse ration, containing about 14 per cent fiber. The usual recommendation that calf meals contain less than 6 per cent fiber is based on the assumption that the calf stomach matures slowly, requiring several months to become functional.

This high-fiber ration was fed to one member of each of 13 pairs of Guernsey, Jersey, and Holstein calves. Their pair mates received a complex concentrate feed containing 6 per cent fiber. The constituents of the low-fiber feed included shelled corn, wheat bran, non-fat dry milk solids, and ground oats. Both rations contained 18 per cent protein.

During the 60-day trial, calves on the high-fiber feed ate an average of 64 pounds of concentrates and 12 pounds of hay. They gained an average of 64 pounds in body weight. Calves in the low-fiber group consumed feed at an average rate of 57 pounds of concentrates and 13 pounds of hay. They gained an average of 60 pounds during the trial.

It does not appear to be necessary to supply special meals for calves. As a rule, one feed mixture should be adequate for all classes of dairy cattle. Of course, there are times when this may not apply. A good example is when pastures are composed entirely of high-quality legumes and consequently the cows' concentrate feed may be too low in protein to support normal growth in young calves.

At the last corn cultivation, cultivator shovels set too deep and too close to the corn cause root damage.

This brings up the question of leafy roughages for calves. The long-standing recommendation of a mixture of grass and legume

hay is a good one, but it is by no means exclusive. Records at the Florida station indicate that legumes, grasses, or mixtures are satisfactory.

Fertility of the soil on which the forage is raised, stage of maturity at cutting, and conditions of curing are more important than species of plant as long as improved and recommended forages are used. Grass hay which is cut at an immature stage from well-fertilized stands and cured as quickly as possible is used routinely for young calves at the Florida station. At the North Carolina station, calves fed corn silage to 4 months of age made gains comparable to those made by calves fed good-quality hay.

Good grass silage is a milk maker.

Since the ruminant function develops at an early age, we should expect young calves to be able to use succulent forages sooner than at 6 months. Experiments in England, New Zealand, and in the United States have proved this. In fact, Georgia workers have raised calves on pasture from 1 week of age. The best possible kind of pasture is necessary in addition to extra milk for this system, but concentrate feeds are not essential.

Then there is the question of housing. Individual pens are recommended for very young calves, unless they can be kept in groups of about the same age. Portable pens have been improved considerably since they were introduced about nine years ago.

Modern portable pens include removable, draft-proof plastic film at the covered end, protected feed boxes, treated lumber with pens bolted together at the corners. They are easy to disassemble and store between calving seasons. In this way, many years are added to the life of the pens.

Pasture-raised calves need shelter, too. Inexpensive, three-sided sheds that can be bedded with straw and cleaned once per year are sufficient. Healthy calves can be weaned onto pasture and concentrate feeds as young as 2 months of age. This saves considerable labor in feeding and barn or pen care operations.

The high cost estimated for raising heifers often is based on the assumption that the first calving will occur at about 28 months of age. Under favorable conditions, however, using the system described here, heifers of all major dairy breeds are bred to calve at 2 years of age. This means that growthy heifers are bred when 15 months old. Conception rates are very high at this age and, though there's no actual proof,

close observations indicate that thereafter they decline rapidly.

Many dairymen avoid raising calves and miss the opportunities offered by a definite breeding program. They are convinced that it's cheaper to purchase springing heifers of unknown breeding. As revealed by recent research findings, attention to details will reduce the cost of raising calves to considerably below the market price of even mediocre replacement stock.

Five Steps To Profit In Marketing Timber

Are you a woodland owner? Do you plan to sell timber in the near future? If so, John H. Gilliam, North Carolina forestry specialist has developed these steps for adding extra money to your pocket:

First, let a forester help you decide what timber products you have for sale. The forester can make a visual inspection of your woodland and tell you if your timber stand needs thinning or a clearcut.

Second, if thinning is needed, let the forester mark the trees to be cut. Let him also determine the amount of timber you have for sale. If you know the kind of timber product you have, and the amount for sale, you'll be in a much better bargaining position.

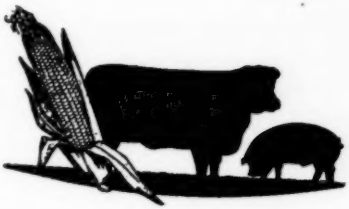
As a third step, advertise your product. Contact prospective buyers. A list of timber product buyers can be obained from your county agricultural agent. Invite buyers to inspect your timber and make an offer.

Fourth, draw up a legal sales agreement. A sample sales agreement can be obtained from your county agricultural agent's office. Include in the agreement such things as (1) length of cutting time, (2) how timber is to be cut, (3) right of way, (4) and ownership of laps and slabs, etc.

As the fifth and final step, sell to the highest bidder. And make sure the buyer understands the sales agreement.

Gilliam is convinced that these steps will not only assure a woodland owner of a more satisfactory sale, but that the buyer will be better satisfied too. He will know what he is buying, and under what conditions. —*North Carolina State College*

What The Commercial Cattleman Wants From The Registered Beef Breeder



Learn these points to breed more profitable beef . . .

Condensed from
The Polled Hereford World
L. M. Jewett, Manager, *Fred H. Bixby Ranch Co.,* Long Beach, California

THIS title sounds almost as though registered breeders have something commercial breeders want and can't get. Actually I feel the registered breeder, in most cases, is producing the kind of range bulls that fills the commercial needs; however, it might be a matter of price in some cases that makes the quality hard to find. (I would like to emphasize, here, that these remarks reflect only my own experiences and are not given with the thought that they are the only answers to this problem).

I think to get to the basis of what the commercial man wants from the registered breeder we should go to the end product of all beef and work backwards—that end product, of course, being the beef in the show case that the housewife buys. I think it is pretty well recognized that the majority of housewives prefer a medium sized steak or roast that grades choice or top grade and that comes from a reasonably young animal. Now, to get such a piece of meat the packer must buy from the feeder a well bred, good conformationed animal that has been fed enough to produce some marbling in the meat. The feeder must have from the stocker man or commercial breeder yearlings or calves that will grade choice when fed. The man who stocks calves or yearlings looks to the cow and calf man for his stock and wants the kind that will convert his particular range to the most economical beef. The man with the cow herd must produce these kind of calves and he looks to the registered breeder for his range bulls to produce his steers and his replacement heifers. I feel that the commercial

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cattleman must have a cow herd that grades 2 to 2+ and a bull herd as good or better if he is to produce our end product for Mrs. Housewife. So working backwards, most beef steaks come from purebred herds and your final product is what the housewife buys.

Now I don't mean to say that all cattle must be like this; neither do I mean that all steak must be choice. There is a place in our cattle economy and our consumer economy for all kinds of cattle. Weather, range conditions, available cattle water could all determine what kind of cattle to run. Buying and selling prices could also determine what sort of cattle to run. I recall one feeder showing records that gave him more net return from "Oakie" cattle. I think, however, that we are concerned with those herds that can and do use the better grades of cattle.

Before we go too far into what the commercial breeder wants from the registered breeder, let us consider a few factors that help determine profit and loss in a commercial set-up from the *production* angle *only*.

1. High per cent of calf crop weaned. ,
2. Large per cent of early calves.
3. Heavy calves at weaning.
4. Good quality calves.
5. Uniform calves.
6. Polled or dehorned, vaccinated, castrated and well cared for.

Now, what can either the commercial man or purebred breeder do to increase these? Let us take 1 and 2 together. I think that the number of cows per bull and the cowboy looking after your stock are most important on these. (This is, of course, assuming health and feed are not impaired.) Our Company ran 20-22 cows per bull in 1952 and we got 83% weaned calves and probably 70% of our calves in a 60 day period. Now we run 17 cows per bull and get 86% to 90% weaned with 85% on the ground in a 60 day period. Next year we plan to cut this to 14 cows per bull. If we get 1% more weaned and get 10% more early calves, the extra bulls are easily paid for in extra weaning weight. It is very important that the rider keep bulls well distributed over the entire range and to care for cows and calves that need help. This is, of course, a management problem

Sheep and cattle affected with foot rot should be isolated from the remainder of the herd. Diseased animals can contaminate lots and pastures, exposing other animals.

and does not reflect on breeding except as to how the bulls range and the cows milk.

The purebred breeder does enter into the next point, however, along with Mother Nature. If we don't get rains we won't have heavy calves no matter how good the breeding, but let's be reckless and assume we do get a good rain year. Breeding could make quite a difference. The Oklahoma Station recently released some figures on a test of 175 cows, gate cut, bred to different bulls over a period of years. The

During the past 17 years, agricultural efficiency has improved as much as in the 120 years previous.

weaning weight of the calves of the high bull was 504 lbs. to the low bull's calves of 440 lbs., thus, a 64 pound advantage. Now in our case of 1,700 calves, that would be 108,800 lbs. at say 25c or $27,200. Of course you don't find this complete difference in any one set-up but it illustrates how important breeding can be. The high bull also had the heaviest calves at slaughter at the youngest age with highest dressing per cent and grade.

Purebred breeders also enter into points 4 and 5 — quality, type and uniformity of calves. I know that a uniform type bunch of steers will bring up to 2c more than calves that don't show this quality. The commercial man *must* have type, good quality, replacement heifers for his herd or he will soon slip down hill.

I would like to set down some long term studies made at the U.S. Range Livestock Station at Miles City, Mont., that pertains to breeding:

Characteristics	Per Cent Heritable
Birth weight	72
Weaning weight	23
Final weight off feeding test	84
Gain on feed	60
Efficiency in feeding test	22
Shipping shrink	91
Grade before slaughter	42
Carcass grade	16
Dressing per cent	73
Color of eye muscle	31
Area of eye muscle	72
Thickness of fat over eye	38

I think you can readily see those that are most important to the commercial man. I think it is tremendously important to purebred breeders and to the cattle industry, that they continue to do all the testing they can. It is very hard for a commercial man with a large herd to do much progeny testing. I would like to buy gain tested bulls that had been on a growing ration—no nurse cows or show barn rations. We bought

yearling bulls this year and we weighed and graded them at the beginning and at the end of the period with results that will be of value to the purebred seller as well as the buyer. I think purebred men would do a better job for the commercial man to produce well grown, unfitted range bulls. Young bulls must be well conditioned and hardened to the range, as their first year is the toughest of their lives. A word of caution—don't let weight for age or gaining ability be your only guide or we will end up with a lot of big, "horsy" cattle no one wants.

This is a big and important subject and I have hit only a few high spots which I hope will serve to give some thought that will benefit the entire beef cattle industry.

Inbreds Produce Fewer Calves In Tests

Inbred lines produced about 10 percent fewer calves than did outbreds and "hybrids" or line crosses in Colorado State University tests with beef cattle.

The tests were conducted over a period of six years at Colorado State Universities' San Juan Branch Experiment Station near Hesperus, Colorado, under the direction of Dr. H. H. Stonaker, chief animal husbandman of the Colorado Agricultural Experiment Station.

Lowered conception rate or a larger percentage of embryonic deaths in the inbreds and a lower survival rate of calves born among the inbreds were the two factors accounting for the difference, Dr. Stonaker reports.

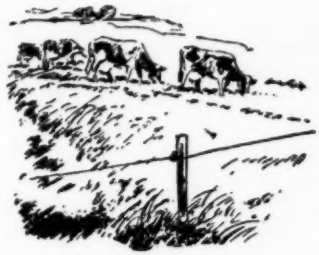
During the test, 110 two-year-old inbred Hereford cows were exposed to bulls. Number of calves raised was 53, a calf-crop percentage of 48. In the same period of time, 107 two-year-old linecross Hereford cows were exposed to bulls. Sixty-four calves were raised for a 60 percent calf crop.

Figures in each case were higher for cows three years old or older. In this category, 390 inbreds were exposed to bulls and 291 calves were raised for a calf crop percentage of 75. This compared with 416 linecross cows in this age bracket which raised 355 calves for an 85 percent calf crop.

The test substantiates evidence in poultry, swine and dairy cattle that among the greatest costs of the inbreeding process are lowered conception rate and survivability, Dr. Stonaker notes.

—Colorado State University

Green Chopping Or Rotational Grazing?



Read this informative article before you make a change . . .

Condensed from
Guernsey Breeders' Journal

E. T. Shaudys and *J. H. Sitterly,* Ohio Agricultural Experiment Station

DURING 1956 and 1957, costs and other information on 26 farms using green chopping and 33 farms using rotational grazing systems were obtained. These farms all had dairy herds and were located in the northeastern and west central sections of Ohio. This article is based on the survey.

Pasture and Profit

Pasture has long been considered one of our cheapest livestock feeds. A large percentage of the forage available has been lost through tramping and contamination when the animals are permitted to graze over a large area. Also, utilization of total forage nutrients produced was poor because of differences in the rate of forage growth and livestock consumption.

Today, many dairy farmers must get the highest milk production possible from each acre cropped or grazed to obtain a sufficient volume of business for a satisfactory income. However, production costs must be kept down or the increased yields will add little to the net returns. Feed accounts for about half of what it costs to produce milk. On dairy farms practicing conventional grazing, pasture makes up less than five per cent of the total cost.

Intensive Trend

Intensive grazing methods add to pasture costs. Will the returns be greater than added costs? Farmers are confronted with selecting the most desirable system of pasture usage for their particular farm situation. The need for greater volumes of business and high land values has caused farmers to intensify land use. This has been accomplished by combining more labor, capital and manager-

Reprinted by permission from Guernsey Breeders' Journal, Petersborough, New Hampshire

ial effort with each acre of forage. Pasture improvement, rotational grazing and green chopping permit more intensive use of an existing meadow area.

Systems Defined

Three grazing systems are considered in this article:

1. Conventional grazing is the system most commonly used on Ohio farms. Animals are given unrestricted access to the entire acreage of pasture considered adequate by the farmer to carry the herd until second growth meadow becomes available. Often this means leaving the animals in the same field for two months or more. Usually conventional grazing involves the addition of meadow aftermath and new meadow seedings during the season. The animals often have unrestricted access to all areas at the same time or are shifted to an entire field of meadow aftermath or new seeding until it is consumed.

2. Rotational grazing, as defined in this study, is a system in which the pasture area is divided into three to five smaller fields or paddocks which are grazed in sequence. As one area is grazed down, the cows are moved to the next. The cows may graze over the same area three or four times during a season. Tramping and contamination are reduced by restricting the livestock to a small area at one time. Clipping after the cows are moved to the next lot results in a more palatable and uniform growth for the following grazing period.

3. Green chopping is more intensive than rotational grazing. Forage is cut daily with a field forage harvester and hauled to the cattle for feeding. Tramping and contamination are eliminated and most of the forage growth can be consumed by the livestock.

Many dairy farmers make hay or silage from part of their first crop rotation pasture, then graze the rest. Both rotational grazing and green chopping facilitate this practice. More pasture acreage is needed from mid-summer on because of slower forage growth. Usually about all of the pasture area is needed by the end of the season and on some farms must be supplemented by feeding forages harvested during the surplus growth period.

The thoughts of people are more valuable than money. When two people exchange dollar bills; then each has only $1. When they exchange an idea, each then has two ideas!

Cow: Pasture Ratio

Carrying capacity or pasture yield is directly related to the pasture management system used. About three-fifths of an acre per

cow was used early in the season for green chopping. The area was increased to four-fifths of an acre per cow during the latter part of the pasture season. Farmers using rotational grazing provided three-fourths acre per cow early and increased it to over one and one-tenth acres later. The conventional grazing system requires about four-fifths of an acre early but was increased to one and three-fourths acres at the end of the season. If a given acreage of forage were green chopped, it would provide forage for 25 per cent more cows than if rotationally grazed and about 40 per cent more cows than if conventionally grazed.

There were an estimated 102 million cattle in the United States on January 1, 1960; an all-time high.

Consider Herd Size

Herd size affects the choice of system. Farmers included in the study and practicing green chopping, fed about 50 cows compared to 30 cows for rotational grazing. The higher equipment and labor costs of green chopping need to be spread over a sizable number of cows. Otherwise, the added costs will absorb all of the increased returns.

Production per cow was maintained at fairly uniform levels on farms using intensive grazing systems throughout the pasture season. A high level of forage and herd management is essential regardless of the system used. Considerable variations in forage production occur from month to month and year to year. Flexibility in the pasture system is necessary if maximum efficiency in the use of pasture is to be achieved.

The added production of milk is the final measure that must be compared to the added cost.

If overstocking has not been practiced and milk production has not been reduced by inadequate feeding, the shift to intensive forage grazing systems will add little to farm income unless more cows are added. Carrying capacities are greater and any additional income must be derived from more animals, not higher production per cow.

In most farm situations it is easier to meet the added cost of rotational grazing than of a green chopping program. Some farms have been short of feed and low production has resulted. Increased production then can add to net income and may offset the added cost of rotational grazing or green chopping. In any case, green chopping must add 350 to 400 lbs. of milk per acre as compared to 100 lbs. for a rotational grazing system.

Figuring Costs

Rotational grazing and green chopping systems were more costly to use than more conventional grazing programs. The farmers using rotational grazing had an additional cost of $3.10 per cow for the 1957 pasture season. Costs of using green chopping systems averaged $14.75 per cow more than conventional grazing programs for the same period. Additional costs included the installation of temporary fencing, labor for moving cattle and clipping for rotational grazing and the use of equipment, such as chopper, tractor, bunks and wagons and extra labor for green chopping.

Labor and fencing were the largest items of added cost for rotational grazing. Labor cost varied with the distance the cows had to be moved to and from the barn. Some farmers used temporary fences in the same location two or more years; others relocate fences every year.

Labor, power and equipment made up the largest items of cost on the farms using green chopping pasture systems. Fence needs were eliminated but chopping had to be done at least once, and on some farms twice, each day. About one and one-half times as much labor was required per cow for green chopping as for rotational grazing. Average added labor used per cow for the season ranged from 1.2 to 3.8 hours per cow for rotational grazing and 3.7 to 5.7 hours per cow for green chopping.

More important to many farmers than the actual hourly labor requirement is the constant daily labor and equipment demands of the green chopping system. Conflict with other work was a serious problem during part of the period. Four farmers experienced enough conflict for machine use that an additional chopper was purchased just for the green chopping activity. Chopping was disrupted an average of three and one-half days during the season because of soft fields, breakdowns and rain. The feed requirements for these days were met with hay, silage or pasture.

A recent survey in North Carolina showed that 90 per cent of the calves and yearlings checked at slaughter houses had worms.

Going to green chopping or rotational grazing? Consider these points first:

1. You must increase milk production 100 lbs. per acre with rotational grazing and 350 to 400 lbs. per acre with green chopping over that produced with

conventional grazing to break even.

2. Your level of forage production per acre must be high.

3. Neither system will add much to your income unless you add more cows (unless overstocking has been practiced).

4. If you do adopt one of these systems, rotational grazing may be more profitable of the two on most farms.

5. Both systems have been enabling farmers in this study to produce more milk on the same acreage.

Performance Testing Key to Successful Livestock Production

Performance testing of beef cattle and hogs is one of the top methods farmers can use to help increase livestock profits.

Through this program a farmer can get a better idea of the productive value of his cattle and hogs, emphasizes G. R. Carlisle of the University of Illinois College of Agriculture. The livestock extension specialist points out that performance testing shows the following major factors:

1. Rate of gain in both cattle and hogs.

2. Carcass length, backfat thickness and loin-eye area in hogs.

3. Ability of sows to farrow large litters; ability of cows to wean heavy calves every year.

4. Ability of beef bulls and boars to sire offspring that measure up to desired levels of performance.

Carlisle admits that performance testing involves bookkeeping. But he says most producers feel that it is time well spent.

As proof of performance testing's value, he cites one beef producer who raised his calves' average weaning weight by 83 pounds and their type score one full grade by changing bulls. Records showed that the previous bull just wasn't doing a good job.

Many producers can raise average weaning weights by 20 pounds. They simply cull the bottom one-sixth of their cows that produce the lightest weight calves.

Farmers interested in enrolling their swine or beef herds in a performance testing program are urged to contact their farm adviser.

—University of Illinois

Treating Posts To Make 'Em Last

This treatment can be done in a 55-gallon barrel . . .

Condensed from Tennessee Farmer

Dayton Matlick

DID you notice that fence post down by the barn? Rotted off at ground level. It probably seems that you just put that post in a year or two ago. And, chances are you are right.

Forestry research on the Ames Plantation, in Hardeman county, Tennessee, has dealt with the use of various chemicals and methods of treatment for making pine and hardwood fence posts last longer.

Types of Timber to Use

Research conducted indicates that willow, cottonwood, and soft maples cannot be treated economically. If available, the less valuable species of trees—such as elm, beech, hickory, sycamore, and hackberry—should be used.

The best idea is to get your fence posts and improve your timber stand at the same time. Small trees of the better species that are poor in vigor, form, and stand too close together should be used.

Size of Post Needed

Since it costs more to treat a large post than it does a small one, the posts should be no longer than necessary. The best size post is 3 to 5 inches in diameter and 6 feet long. If this post is set in the ground 1½ feet, it should hold well. If you want to set the posts in the ground 2 feet, the posts should be 6½ feet long.

If possible, trees should be selected that would make posts without splitting. If such trees are not available, the larger trees should be split so that each post is made up of either all heart wood or all sap wood. The reason for this is that the different woods absorb chemicals at different rates.

Posts should be peeled (a straightened, used hoe works well) and seasoned for at least two months before treating. For seasoning, the posts should be stacked 8 to 12 inches off the ground, on well-drained ground. Plenty of air space should be left on all sides of the posts. If sea-

Reprinted by permission from Tennessee Farmer, 1529 Demonbreun, Nashville, Tenn.

soned in summer, the posts should be stacked in the shade to avoid cracking.

Because most posts rot off at ground level, the bottom of the post should receive more treatment than the upper part.

This treatment can be done in a 55-gallon barrel or two barrels welded together vertically and sunk partially in the ground. For treatment where it is not desired to have different ends of the posts treated for different periods of time, a horizontal treating tank or trough can be used.

If you use the upright method, it is best to set the drum a certain depth in the ground. If you want to use 6-foot posts, the drum should be set 1½ feet in the ground. This way you can treat the lower 2½ feet for a longer period of time and then treat the upper 3½ feet. To do this, the tank should be at least 4 feet in depth.

How to Build Tank

The easiest way to build a horizontal tank is to have a metal barrel cut in half from top to bottom with one end of the barrel removed. These two halves, with one end open on each, are then welded to a similar half with both ends open—forming a watertight container the length of three barrels. This trough will hold several posts below the liquid level if weights are added.

The chemicals used in the treatment are pentachlorophenol or copper napthenate. They are available at many large chemical companies. You will also need some diesel fuel to dilute the chemical concentrate.

For a small operation that will treat only a few posts, a 5-gallon can of concentrate and a 55-gallon drum of diesel fuel will do the job. For a larger operation, the proper solutions will have to be mixed (5 per cent pentachlorophenol or 8 per cent copper napthenate).

Well-dried hardwood posts or lumber need at least two days of treatment. There is little danger of over-treating. Be sure that the posts are completely submerged during this time. When they are removed and drained, they are ready for use.

Animal scientists say a good mineral mixture for cattle or sheep on a high roughage diet consists of two parts bone meal to one part of loose salt.

How Long to Treat

The time that posts and lumber need to be treated varies with the type of wood. Southern yellow pine posts or lumber need 6 pounds of solution to each cubic foot of post or lumber.

When figuring the cubic feet

in a pile of the pine, stack the posts according to size and multiply the length of the pile by the width and then by the height to get the cubic feet in the pile. Because of the space between the posts, it is necessary to divide this figure by three-fourths to get the actual cubic feet.

Then place the posts in the drum and treat until the required amount of solution has been soaked up, which usually takes one day. This is 6 pounds for each cubic foot of shortleaf pine, and 4 pounds for each cubic foot of blackjack oak, red maple, scarlet oak, white oak, and post oak.

If you are giving the bottoms of the posts more treatment to help them last longer, the lower parts of the posts should be treated longer and should absorb about one gallon for each cubic foot to a point about 12 inches above the proposed ground level. The rest of the post should absorb about one-third of a gallon for each cubic foot treated.

When you know how much chemical a special group of posts should absorb—making sure the group is made up of the same kind of wood—fill the tank until the chemical covers the area to be treated. Mark the level of the liquid and then measure out the amount of liquid the posts should absorb in a separate container.

As the level goes down in the drum, add more of the solution from your measured chemicals. When you add the last of the separate chemicals to the drum, the level of the chemicals in the drum should be the same as when you started, indicating that the posts have absorbed the right amount.

Treat by Time

It is not necessarily true that the posts will absorb one-third of a gallon of chemical for top treatment in one-third of the time it took to absorb one gallon. Be sure to time both procedures the first time. Next time, you can treat similar posts by time rather than measurement.

To avoid adding chemical every hour or so, you can hang a can with a spigot over the tank, put the chemical in the can, and adjust the spigot so that it will drip enough to keep the chemical at the right level in the tank.

Rotation has several values, and pest control is a very important one. Rotation helps control several soil-borne diseases, insects, nematodes, and weeds. Rotation is one of the cheapest means of controlling pests. No one rotation will suit all soils and farm conditions; each farmer should know just which rotations work best on his farm and in his locality.

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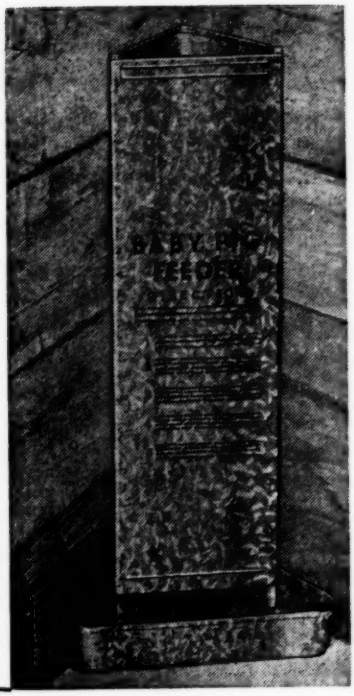

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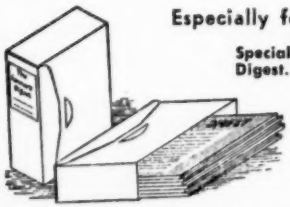

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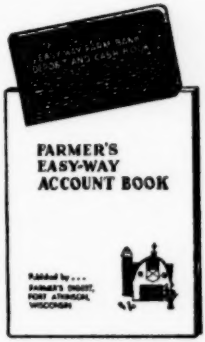

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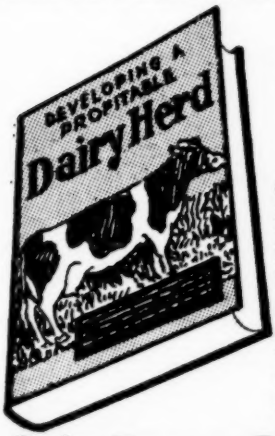

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